THE VETERINARY JOURNAL
AND
Annals of Comparative Pathology.

SEPTEMBER, 1880.

# ANTHRAX VACCINATIONS.

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FOR nearly four years I have been almost exclusively occupied with the disease caused by the *Bacteridium* (Davaine), or *Bacillus anthracis* (Cohn). The many experiments I have made during this study have enabled me to collect a number of valuable facts with regard to the natural history of the parasites, and which I have utilized so as to produce in the animal organism such a condition that it will no longer afford them refuge: whence the impossibility for it to be affected with Anthrax.

It is easily understood that when the Bacteridium is introduced into the body, it does not find itself in absolutely normal conditions, and that although its development always occurs in the French and English breeds of sheep and in the rabbit, in such a way as to cause death, it nevertheless vegetates with difficulty. As a proof that it never reaches its complete development in the tissues or fluids of an animal, I may mention that *it never yields spores, but that its multiplication always takes place by division of the mycelium.* On the other hand, certain races or species never contract Anthrax, although their conditions of life appear to be identical with those of animals which succumb to it. The pig, for instance, is exempt. Lastly, there are species of animals which readily take the malady in their youth, but lose this

faculty at adult or old age: such are the dog, horse, and ass—the young of which always succumb to Anthrax inoculation, while later in life a large proportion resist the effects of inoculation. M. Chauveau has even demonstrated that in a number of Algerian sheep, nearly all were refractory to bacteridian infection.

From these various observations, I have sought to put the organism in such a condition as to prevent the development of the Bacteridia, and have made numerous experiments with this object. After unsuccessful attempts, I have now succeeded, by very simple means, in preventing the multiplication of these organisms in the young dog and sheep. In other terms, I can vaccinate sheep so that they will resist inoculations and intravascular injections of considerable quantities of Bacteridia, no matter whether these exist as spores obtained by cultivation, or in the form of short rods, as they are found in the blood of animals which have perished of Anthrax. The following is a sketch of the experiments conducted up to the present time, and which fully demonstrate the truth of the statement I have made.

*Dogs.*—I have assured myself that dogs from birth until six months old, very readily contract the malady by simple punctures, and that they die with great quantities of Bacteridia in their blood, while the local and gland lesions are extremely marked. Eight young sporting dogs, derived from three bitches, were experimented with. Four were vaccinated by the method I have adopted, the other four were not. I so selected the animals that in each lot there were brothers. The four vaccinated dogs resisted four successive inoculations by puncture or subcutaneous injections of Anthrax blood. The other four non-vaccinated dogs succumbed to the first inoculation in from two to four days, with considerable œdema around the point of inoculation, and the lymphatic glands in the vicinity swollen to from ten to fifteen times their original size. These glands were crammed with Bacteridia, while in the blood these organisms were more numerous than the globules. At the first inoculation the vaccinated dogs exhibited a slight amount of fever, and two had a very slight œdema at the seat of inoculation. The other punctures comported themselves as the most trifling wounds.

*Sheep.*—My experiments extended over eleven of these animals. They all belonged to the Lauraguais breed, with which the so-called spontaneous form of Anthrax often makes great havoc. Five were inoculated with Anthrax material *once only*, at different times, and they all died in two or three days. For three years I have experimented with this breed, and I have never found one to resist the Bacteridia, no matter how small the quantity inoculated.

The remaining six animals were vaccinated. After one vaccination, two were inoculated with Anthrax material, and one died presenting the ordinary symptoms. The other five were again vaccinated, and during two months each has been inoculated four times subcutaneously with the Anthrax blood from dogs, rabbits, and horses, and one inoculation with spores, but without giving rise to any local or general phenomena.

On each occasion that one of these vaccinated animals was inoculated, care was taken to ascertain the activity of the material by inoculating one or more rabbits, which have always succumbed.

The absence of local phenomena appeared to me to indicate that the blood itself had become unfitted for the reproduction of the Bacteridia. To prove this I have injected into the facial vein of four of these animals two or three drops of rabbits' blood, a quantity which represented for each animal a total of about two hundred millions (200,000,000) of Bacteridia introduced directly into the blood. These four sheep never showed the slightest disturbance in health. At present the five sheep are in good health, and give no evidence of the vaccination or the various inoculations practised upon them. I purpose, however, inoculating them from time to time, in order to determine the duration of this immunity. I am at liberty to state that it lasts for more than three months, three dogs and a sheep having been inoculated on May 1st, and the last time on July 22nd.

These results are arrived at by a very simple method which, for two reasons, may be readily applied to entire flocks. It consists in injecting beneath the skin, on any part of the body, Anthrax blood freed from Bacteridia, either by filtration, heat, or even antiseptics.

Paper filtration is a long and very difficult operation, and requires at least a dozen sheets of blotting-paper. The blood, too, must be very diluted, as in non-diluted blood there is a viscid material which entirely prevents filtration. Even in creating a vacuum beneath a plaster of Paris filter, a sufficient quantity of Anthrax blood cannot be obtained. I therefore prefer the action of heat.

In raising fresh blood which has, if possible, been obtained from an animal killed, to a temperature of 55° Cent. (131° Fahr.) for ten minutes, there is almost a certainty that all the parasites are dead. Nevertheless, it is well to add to the blood one-half per cent. of carbolic acid, and to wait for two or three days before injecting it into the sheep. It might even be well to try its effect first on rabbits.

When it is certain that the fluid is deprived of the parasites, it is introduced into the subcutaneous connective tissue. I usually select the head or neck, and inject from three to four cubic centimetres (1.181 to 1.575 cubic inches).

In the course of the day this quantity is absorbed, and in twenty-four hours there is no trace of it. This procedure gives rise to a slight degree of fever towards the third or fourth day, and the temperature may ascend to 42° Cent. (107.6° Fahr.), but towards the fifth day everything is normal, and if an interval of fifteen days is allowed to elapse before inoculation with Anthrax blood is attempted, it will be found that this is altogether inert, and produces neither general nor local phenomena.

With respect to the nature of the material employed, and the manner in which it comports itself in the body, it may be said that it really presents all the characters of a veritable vaccine. It does not itself produce any effect, but through a substance to which it gives rise.

Thus, when Bacteridia or spores are administered at the same time as the vaccinal injections are made, death from Anthrax will occur, as will also be the case when the Anthrax inoculations are made during the first few days after vaccination. To be safe, it is necessary that an interval of at least ten to twelve days should elapse between vaccination and inoculation. Subsequent to the day after the vaccinal injections, it may be said that

nothing is to be seen at the seat of inoculation; the injected material has been absorbed, and has passed into the nutritive fluids, and if it is not at this time active like the vaccine virus, it is because it is not that virus, but induces its formation. Neither is it a means of cure; for when injected into the blood-vessels of an animal which already has the Bacteridia in its blood, it neither prevents nor retards the development of the symptoms which terminate in death.

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## PATHOLOGICAL NOTES.

BY T. WALLEY, PRINCIPAL, ROYAL VETERINARY COLLEGE, EDINBURGH.

*Scrofulous Abscess in the Thymus Gland of a Calf, with Secondary Pulmonary Abscess, Pyæmia Pulmonum and Suppurative Pericarditis.*

*Lymphadenoma (?) in Lungs of Cattle. Tubercle in Kidney and Epicardium.*

DURING the past winter I received the lungs of several valuable short-horn calves from Mr. Bromley, of Lancaster, which presented lesions somewhat allied in general appearance to those of Pulmonary Tuberculosis, but in each instance I found on examination that the lesions were those of Broncho-pneumonia, of a septic or pyæmic character, the occurrence of which I could only attribute to the existence of some deleterious agent in the atmosphere which the animals inspired, or to some local lesion such as omphalitis.

On the 10th of February I received the thorax of a calf (two months old), containing the lungs, heart, pericardium, thymus gland, and part of trachea, all *in situ*, and presenting the following pathological conditions:—

*Thymus Gland* had evidently been much enlarged, but with the exception of a thin layer of its outer surface and its surrounding connective tissue, it had undergone characteristic (scrofulous) caseous degeneration; its connective tissue was much thickened, and extremely hyperæmic.

The gland was intimately adherent, by pseudo-membranes, to the base of the heart and the anterior lobe of the right lung.

*Lung.*—In the root of the above-mentioned lobe secondary infective inflammation had been established, which had also resulted in caseous degeneration; radiating around this abscess were numerous small nodules of caseous matter, evidently, from their character and distribution, due to auto-inoculation (through the lymphatics) from the abscess. Scattered over the remaining portion of the lung were great numbers of small circumscribed patches of hepatization, which on careful examination proved to be the commencement of miliary (pyæmic) abscesses.

*Heart*, healthy. *Peri- and Epi-cardium*, however, much thickened and united by masses of imperfect coagulated lymph, which had been rapidly undergoing purulent degeneration. The pericardium was adherent to the costal pleura on the right side, and to the pulmonary lobe before mentioned.

*Tracheal and Bronchial Mucous Membrane* was highly inflamed, and the tubes were charged with purulent material from the affected lung. No tubercle nodules existed in any part of the lungs.

*Rationale of the Morbid Processes.*—From some causes inflammation had been established primarily in the thymus gland, and owing to the existence of a scrofulous diathesis, the inflammatory products had undergone caseous degeneration and liquefaction, followed by absorption through the lymphatics of infective matter, the other lesions being secondary and tertiary to the thymal disease and consequent upon it.

*Pulmonary Lymphadenoma (?).*—On the 26th of February I received, also from Mr. Bromley, portions of the lungs of a well-known short-horn bull. The animal from which the specimens had been removed was ten years old, and up to within a fortnight of death had never shown any symptoms of illness. At the period mentioned, slight pulmonary symptoms set in, but the hair retained its healthy satin-like condition until death.

On autopsy, the whole of the viscera, with the exception of the lungs, were found healthy.

The portions of lung sent by Mr. Bromley were dark in colour, firm in texture, and did not collapse; under the pleura numerous

hard nodules, of a grey colour, and about the size of large peas, could be seen and felt, and in making sections through the lung, thousands of nodules, presenting all the characters of Lymphadenoma as described by me at p. 165, "Bovine Scourges," were exposed. The uninvaded lobules were of a venous hue, and much compressed, and when one of the small arteries was injected by Mr. A. Grey, jun., the solution was observed to flow through the centre of the lymphadenomatous masses.

A case presenting *post-mortem* lesions identical with the above came under my notice in December of last year, the subject being a cow. The symptoms during life were similar in every respect to those which are seen in chronic Pulmonary Tuberculosis; in this case, too, every portion of the lungs was invaded, the other organs of the body healthy.

I have recorded these cases owing to the rarity with which changes, approaching to those of Lymphadenoma, are met with in cattle, and still more so in the *lungs* of these animals. It will be observed that I have placed a note of interrogation after the word Lymphadenoma in the title of these cases. I have done so because there may be a question as to whether true lymphadenomatous formations are found in the lungs of cattle.

I have seen and described such in the liver of this animal, in a case which occurred in the practice of Mr. J. R. U. Dewar, but, as I have before stated, these are the first instances in which I have met with them in the lungs; moreover, on submitting a specimen of lung from Mr. Bromley's bull to Dr. Hamilton, of the university, that gentleman expressed doubts as to the identity of the formations with those of Lymphadenoma, though he acknowledged at the same time that he could not positively distinguish the true characters of the nodules.

*Tuberculosis of the Kidney and of the Epicardium.*—During the past month I have received two specimens—viz., the kidney of a young cow from Mr. B. Kettle, of Market Drayton, and the heart and pericardium of a two-years-old short-horn heifer from Mr. Leonard Potts, of Wigton, both of which possess several features, rendering them worthy of record.

(1) The *kidney* was remarkable for its enormous size, and the pathological changes which had taken place in its medullary

structure. It weighed 12½ lbs.; the lobules were very distinct, and rounded in centre, and when sections were made through them the medullary structure (in every lobule) was found in a liquid state, not a particle of the original tissue being discoverable.

The specimen was too far advanced in decomposition to enable a satisfactory microscopical examination to be made, but so far as I could judge from the physical and naked-eye characteristics of the degenerated products, a mucoid change had taken place. The cortical structure was hypertrophied to the extent of from an inch to an inch-and-a-half, and presented the characteristic appearance of advanced tuberculosis of this structure. The mucous membrane of the pelvis and ureter was healthy, but the connective tissue around the hilum was the seat of multiple tubercular nodules.

Remarkable as these conditions of the organ were, they were eclipsed in importance by the absence of any pathognomonic symptoms of renal disease during life, as will be gathered from the following clinical description of the case given to me by Mr. Kettle himself. He says:—

"I took from a young cow (*post-mortem*) on Friday last, the right kidney, so diseased and hypertrophied as to weigh 12½ lbs.

"I have not dissected it at present, but there appears to be much tuberculous matter in its various lobules. I have never before met with a kidney so large and so much altered, structurally.

"I was enabled to diagnose the hypertrophied condition of the organ by external manipulation in the upper flank, though I could not determine its precise character, as there *was no disturbance of the urinary functions or any symptoms of renal disease, neither did the animal evince any pain or inconvenience on pressure being applied to the organ itself.*

"The cow had aborted about three months before my attention was directed to her, and had been observed to lose flesh and thrive badly since that accident.

"On autopsy, general tuberculosis of most of the internal organs was found to exist."

(2) The *heart*, with its pericardium and adventitious matter, weighed 16 lbs.; this enormous increase in weight being due not

to any hypertrophy of the heart-walls, but to the formation of new material within and upon the epicardium.

This neoplasm was in some parts an inch-and-a-half to two inches in thickness, was solely due to tubercular inflammation, had scattered through its structure numerous tubercular nodules, and so altered the appearance of the heart as to render it—without collateral aid—unrecognisable by the eye.

The pericardium was singularly free from disease, and although extensively adherent to the new growth, was of its normal thickness and translucency. A small portion of the diaphragm was attached to the specimen, and upon its pleura masses of obsolete tubercle were found. The heart-walls and endocardium —with the exception of the former—being slightly dilated, were normal.

Mr. Potts has since informed me that other of the internal organs were the seat of tubercular formations, and that the animal had only been purchased—as sound—a few weeks prior to her death.

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## HYSTERIA AND TETANUS IN A COW, THE RESULT OF FRIGHT.

BY J. WOODROFFE HILL, F.R.C.V.S., WOLVERHAMPTON.

ON the evening of June the 23rd, after a terrific thunderstorm, I was summoned to attend a cow at Mrs. Mander's, The Mount, Tettenhall Wood, which was supposed to be suffering from Milk Fever (Parturient Apoplexy). On my arrival I found the animal, a Welsh one, which had given birth to her second calf two days previously, lying, and presenting the following symptoms:—Breathing loud and cooing, and performed with great difficulty, approaching suffocation; eyes wild and bloodshot; pulse more than a hundred beats per minute, and small; ears and horns hot; body perspiring; tremblings, and indications of extreme mental disturbance. Auscultation revealed intense congestion of both lungs, and loud bronchial *râle*. This was at seven p.m., and I was informed that the patient had been in perfect health, and suckled her calf at five p.m., being immediately after-

wards attacked as described, the time at which the thunder and lightning were most marked. An aperient had been given, and I was requested to bleed her, it being thought, as already observed, that she was seized with Parturient Apoplexy. I, however, pronounced the animal to be suffering from the effects of intense fright, and that probably during rumination : a violent clap of thunder or flash of lightning (which was most vivid) had created immediate suspension of that function, and a portion of the ingesta in its œsophageal ascent for remastication, or in the act of deglutition, had passed down the trachea and given rise to these symptoms of Asphyxia, and the loud peculiar noise usually heard in such cases.

Having administered a good dose of Oleum Lini and half a pint of brandy—no easy task in her violent paroxysms—I had her sides well stimulated with turpentine, and mustard applied along the spine. I had the head suspended somewhat high, swabs placed round the horns, and kept well saturated with cold water.

Intestinal and urinary functions being suspended, enemas were given and the catheter passed ; the milk, which had also partially disappeared, was frequently drawn away.

Several times the patient rose to her feet, and, bellowing, blundered about indiscriminately, and now and then furiously, apparently perfectly unconscious of her actions, or at all events without being able to control them.

Three hours after first seeing her, Tetanus set in, the jaws being firmly locked and the incisors pressed into the pad. Frequently she manifested a desire for water, and thrust her nose into it, but was unable to swallow. Her symptoms of violence, with this alarming concomitant (Tetanus), increasing, I injected subcutaneously one drachm of solution of Atropia, and twenty-four minims of solution of Morphia (Hewlett's preparation). The effect was speedily most marked, the patient becoming quiet and appearing in a calm slumber, which lasted about three or four hours. Early next morning I found the jaws capable of being opened nearly two inches, and other general symptoms of improvement. There was, however, still an expression of bewilderment or stupefaction on the countenance. She had

been up once, and I was informed had attempted to jump the hurdle placed before the doorway. As the day progressed the abnormal symptoms disappeared; she regained complete use of her jaws; small doses of aromatic Spts. Ammon. were given at intervals, and towards evening, excepting a still somewhat wild appearance, she was pretty nearly herself again.

By the following morning complete recovery had taken place.

*Remarks.*—This animal being at all times a remarkably excitable and nervous beast, I have no doubt that this idiocrasy, added to the condition of her nervous system after so recently calving, rendered her more susceptible to the influence of fright, and gave rise to the state described. No external indication of lightning-stroke could be discovered, though such an accident was not at all improbable, as the doors and windows of the building (a small one adjoining the paddock) were wide open, and the electric fluid was seen about it.

It is worthy of remark that at Perton Grove, a short distance from The Mount, at precisely the same time, and on the same evening, two young heifers in the farmyard were seized in like manner; Tetanus supervening in each case, and they died the following morning (no treatment was adopted). A *post-mortem* examination revealed they had been struck by lightning.

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## FOOT-AND-MOUTH DISEASE IN CAMELS.

BY R. PRINGLE, M.R.C.V.S., ARMY VETERINARY DEPARTMENT, AFGHANISTAN.

AMONG camels this widespread disease seems to me to prevail to a much greater extent than is generally believed; in fact, previous to my service in Afghanistan, I was of opinion that it did not exist at all, having been so informed. However, having now seen many thousand camels, and had time to notice them in health and disease, I believe it to be by no means an uncommon complaint. The symptoms in the camel, as in the elephant, differ from those presented by the cow, in a slight degree due, no doubt, to the difference in the conformation of the parts affected in the different animals. So far as my experience has gone, the feet of

the camel suffer more, and the mouth less, than most other animals.

The symptoms are, as a rule, very well marked, and as presented to me, as follows :—

Firstly, the animal appears with a dry, hot mouth, and the usual symptoms of fever. He does not ruminate with the regularity that the camel in health does ; he has a great inclination to kneel and so remain, and if let alone, invariably with his head to the sun, turning gradually round, so as to keep his face always in that direction, commencing in the morning before the sun rises, looking into the east, and finishing in the evening looking into the west, and round again next morning for the rising sun. This symptom is never absent, but indicates nothing more than ordinary fever. In a day or so, the feet become very slightly tumefied, and the animal has a footsore gait. The feet swell over their whole surface, as well as in the cleft ; about the third day they are much swollen, the hair stands on end, and the skin has a glistening appearance, while the entire foot seems to sweat. By this time the mouth has commenced to discharge saliva, and the whole inner surface is swollen and red.

About the fifth day, great quantities of very small vesicles form in a circular direction all round the foot, and from the border of the sole to about three inches upwards, and into the cleft ; the mouth at the same time shows the same symptoms. The vesicles in the mouth of the camel are much smaller than those in the mouth of the cow affected with the same disease, and instead of the membrane sloughing off and leaving a raw spot, the membrane seems to swell up more like a boil ; the top then breaks off and leaves a very nasty little sore. The hair now begins to drop away from the feet, the vesicles burst and discharge large quantities of a clear liquid, which scalds the skin to a dreadful extent. The whole of the skin of the affected parts next peels off, leaving a red band round the feet, which at a little distance looks exactly as if small bundles of little red berries had been hung round them ; at this stage the animal seems to suffer pain in all his joints. The fever usually subsides in about eight or nine days.

In bad cases the whole of the sole-pad sloughs off, which usually makes a hopeless case, although even in this stage the

animal seems to suffer more from the absence (entire) of his natural mode of living.

In this state the animal is of course down, and when once a camel gets down, nothing will tempt him to rise, no matter in what kind of place he may be lying. So that instead of being out to the jungle to gather green food, he lies exposed to a sun that raises the thermometer to 110° or 115° in the shade. This, coupled with the high fever which marks the disease, soon puts an end to the suffering animal.

Regarding the treatment, I have followed exactly the same course as I have before done with the malady in the cow, and have been more successful than in the treatment of any other disease in the camel. This is, in my opinion, due to the fact that we know what the disease is, and have the benefit of our experience with other animals, whereas with other diseases that the camel is subject to, we* do not so well understand them.

Carbolic acid I have found by far the most useful as an application to the feet, with any astringent, such as alum; as a gargle to the mouth, "chiretta" given internally is very useful in keeping down the high fever.

I have not found this disease to be anything like as contagious in the camel as in the cow. But that it *is* contagious, I am quite certain.

The symptoms in the mouth are only to be seen in very well-marked cases, and as a camel's mouth, even in perfect health, has generally a good many scars on its various surfaces, the symptoms of the disease does not at once strike one: those scars in health are caused by the nature of the bushes, etc., on which the animals feed.

I have found good nursing to be attended with better results than I have seen follow the administration of medicines. The prevention of chill during the night, and, if at all possible, the providing of shelter during the day, and the keeping clean of the feet, are the first things to be looked to.

* I have used the word *we* here. I did not mean to do so, but merely meant to say that *I* did not so well understand the others.

## RABIES IN THE HORSE.

BY MESSRS. NELSON AND FLETCHER, M.R.C.V.S., SHEFFIELD.

OUR object in offering this case to the notice of the readers of the VETERINARY JOURNAL, is more as a "caution" than anything else; there is nothing new in the case that we are aware of.

The circumstances and history are as follows:—On the afternoon of the 3rd of June, we had brought to us a large dog of the mastiff and St. Bernard breed, which was supposed to be suffering from stoppage of the bowels, and was occasionally in great pain when he attempted to pass any fæces, and was frequently micturating; these symptoms we were told had been present for two or three days, and he had had some oil given to him twice, but seemed most relieved by handrubbing the belly, which operation the mistress had frequently performed. Upon examination I (Fletcher, for the case came under my care) found the dog was very languid; the conjunctival membranes very much injected; a little frothy saliva from the mouth, but no discoloration of the buccal membranes; pulse scarcely perceptible or countable; great tenderness about the abdomen and over the region of the kidneys. I questioned the owner strongly as to his actions for the last week, for every dog that is ill at this time of the year is said to be going mad. He had never snapped at any one or anything, had not been seen to pick up any straw, sticks, or rubbish; all that had been noticed was what I have already related, but he had not been well since he went into the water, which was about a week. As I was not quite satisfied as to what really was the matter with the dog, I asked the owner to leave him, and I would watch him. He was chained up in one corner of a large loose box, and one of our own horses was tied on the other side. I looked at the dog several times during the six hours before leaving him, and he scarcely moved a foot from the place he was put into, and took little or no notice of any one. Before going to bed, I gave him ʒij. of soda water and a little brandy, thinking the oil had nauseated him; this he took without any trouble and I left him, but judge my surprise the next morning when the groom told me the dog was dead under the horse's feet, but the pole

that was fixed across the box was not disturbed; the dog had slipped his collar and gone over to the horse, and had bitten him about the bottom lip and near hind leg. The horse looked very frightened and would not let us touch his head; the wounds were not lacerated, but clean punctured wounds; the dog was dead, but I could not find a mark about him.

In the afternoon of the same day I made a *post-mortem* examination of the dog. I found the bowels very much inflamed externally, and the mucous coat very much thickened, and of a greenish colour; the bowels contained a large quantity of green frothy mucus; the stomach was very full (in fact, I never before saw so much stuff in a dog's stomach,—as much as is found in many horses') of grass, straw, and earth. There were patches of inflammation in several parts of the stomach, but on the left side there was a black patch the size of a hand, and this is the spot where, I think, he received the fatal kick from the horse, although there was no external mark; one kidney was very soft and wasted, the rest of the organs were apparently healthy.

Some of these *post-mortem* appearances were not very assuring to my mind, but in the absence of every characteristic symptom of rabies during life, I allowed the matter to pass from my mind. The wounds on the horse were dressed as well as could be done, for he was always a troublesome animal about the head. Two days after he went to work as usual, and nothing was noticed until June 26th, when my son came and told me he thought "Wortley" was not well; he had not eaten his dinner, he kept pawing with his fore feet, and had kicked at groom and himself, which was very unusual, as he was so very quiet excepting when we wanted to touch his head. He said he had given him a few handfuls of grass that morning, and that was the only change he had had. I went to look at him and found him pawing and throwing his head up and down, and shifting about a good deal, but not lying down. Set to work to give him Chlor. hydrate ʒiiij., and then I found out what I had to contend with. It was with great difficulty that I got the twitch on him, and then he seized it with his teeth and micturated at the same time; his tail stood straight out; he swallowed the draught very well, but coughed several times after the twitch was taken off.

The muscles of the thighs and arms trembled, and he looked very much alarmed; but in the course of ten minutes he settled down and appeared to be coming round; though in about an hour he began pawing, throwing his head about, and occasionally rubbing his nose and face on the manger; his pulse was 74 and wiry, and it was with difficulty we could get near him, for he either kicked or snapped at us. At 12 p.m. he was pawing violently at times, constantly throwing his head and rubbing his face on the manger, and would not allow any one to go near him—in fact, was more excited when any one was looking at him, which was very unlike some cows (five) we had under our care two years since, and which had been bitten by a rabid dog. They were quiet when any one was with them, but when left alone the bellowing was something dreadful; but there was one symptom present in the horse as in the cows, that was the passing of wind in and out the anus.

At 12 p.m. I left the horse for the night and was with him again at 6 in the morning. As soon as I opened the box-door he made a rush at me, but was prevented getting at me by the chain with which he was fastened to the manger. All the symptoms of the previous night were present, but in a more violent form; he threw himself down with great violence, rubbed his head against the manger until the hair was off in patches. It now became a question of how and how soon I should have him put out of his misery, but I thought a brother practitioner and his pupils would like to see him, and this delayed the shooting of him for an hour and a half, during which time he got very much worse, broke the chain by which he was fastened, and rushed madly about the box; if he saw anyone looking at him through the opening in the partition or in the window, he rushed at them with great violence. At 8 a.m. he was shot.

## "HEART-WATER" IN SHEEP AND GOATS.

BY S. WILTSHIRE, M.R.C.V.S., COLONIAL VETERINARY SURGEON, NATAL, SOUTH AFRICA.

*Notes of post-mortem examinations of four cases.*

### CASE I.

SHEEP found dead in the kraal in the morning; examined it about ten a.m. Body quite stiff and not particularly swollen; on cutting into the abdomen, the flesh and fat were of good colour; the intestines looked healthy, but along their course small nodules, containing a cheesy kind of matter, were noticed: on turning them over, the gall-duct was found to be ruptured.

A careful examination of all the stomachs revealed nothing of moment, except a ball of matted grass fibres in the pylorus, near to which were some flakes of dark-coloured matter, looking somewhat like dried blood, but the nature of which I could not determine. I feel sure, however, that it was vegetable matter.

The liver was dark in colour, congested and softened (*ramollisment*), and easily broken down with the finger.

Spleen somewhat dark in colour.

Both sides of the chest contained a quantity of straw-coloured serum, and I noticed that under the pleural surface of the lungs a clear gelatinous fluid was effused in places.

The lungs showed evidence of inflammation (lobular Pneumonia), being somewhat discoloured in places; and on making incisions, frothy mucus oozed from some of the bronchial tubes, extending to the bifurcations of the trachea.

The pericardium contained a quantity of straw-coloured serum (hence the term "Heart-water") and a gelatinous clot, slightly opaque—evidently albumen. The heart itself seemed healthy; there was a small clot in the right ventricle, but the left was empty. The blood did not present any unusual appearance, but if there was a difference I fancied it was somewhat thinner than usual.

I could not find any lymph effused on the pleuro-pericardium.

CASE II.

Sheep noticed sick for about three days; killed for my examination. On cutting into the abdomen, some fluid was observed in that cavity, and nodules containing caseous matter were noticed along the course of the intestines.

Spleen dark in colour, but firm; liver congested; gall-bladder contained dark-coloured bile.

In the chest, straw-coloured serum was found. The lungs were inflamed in patches (lobular Pneumonia), especially the internal surface of the left lung; the large and some small bronchial tubes contained frothy mucus.

The pericardium contained a quantity of serum. The right ventricle of the heart appeared normal, but the left was darker in colour, with ecchymoses in the endocardium. There was no effusion of lymph in the chest.

On opening the stomachs—which was done last—they appeared normal, there being no discoloration, and the food was well prepared and digested. The intestines were normal.

CASE III.

Angora goat found dead on our way to sheep kraal.

Abdominal viscera healthy, with the exception of the liver, which was congested.

Chest contained straw-coloured fluid; lungs inflamed, with yellow gelatinous exudation, and frothy mucus from bronchi. On internal surface of heart large patches of ecchymoses.

CASE IV.

Sheep found dead in kraal; usual *rigor mortis* noted.

Abdominal viscera healthy, with exception of liver, which was congested and swollen; gall-duct ruptured, yet almost impervious, as the gall could not flow readily when the bladder was squeezed, till it was cut into. Spleen somewhat darkened in colour; bladder empty.

Chest contained usual fluid, and the lungs showed the same dark patches and streaks and bluish colour, indicative of inflammation, as well as the frothy mucus in the tubes. The heart was very dark-coloured on the outside, but no ecchymoses or abnormal appearance was noticed internally.

## EXAGGERATED SYMPTOMS ACCOMPANYING PARASITICAL IRRITATION.

BY "AFGHAN."

THE other morning a field-officer brought his charger to the infirmary, stating that for some time past the horse had crouched and shown symptoms of pain on being mounted, and the previous day he had shrunk and fallen clean over on to his off side. The owner wished to know if the animal was hopelessly injured in the loins. On examination, there was an old "sitfast" on the off wither—not tender to the touch—and round it and on both sides of the withers the skin had very much the appearance as if recovering from the effects of a blister—clean and soft, with a fresh crop of hair appearing. "Mange" crossed my mind; so I asked the cause of this appearance, and was told that the sun had blistered the withers on the march. The horse trotted freely in hand, but when mounted bare back, sure enough he crouched almost on to his hocks. On repeating the mounting process with more deliberation, I observed the horse commenced to crouch as soon as the withers were grasped, especially over the "sitfast"; also he bore away to the off side, and struck out his head with a puckered, quivering extension of the upper lip.

To satisfy myself and the owner that the mange-insect was there, I had the edges of the sitfast scraped on to a white sheet of paper and exposed to the sun. This removed all doubt on that point, for insect-motion was seen in abundance. I did not find the insect on the surrounding parts, the syce had cleaned them too well. Removing the sitfast with hot water, and dressing with mange ointment effected a perfect cure.

Now that you are organizing our "mother," Mr. Editor, if you do not think it inappropriate, I have half a brick that I would like to throw at her ladyship. Undoubtedly there is an apology due from the old dame for begetting us, but my grievance does not go quite so far back. It was some years after that interesting event that I returned and explained to the "benign mother," as she loves to be called, that I had not been quite the credit to her that I ought to have been, and doubtless she would allow me an opportunity of making good my deficiencies. But

no, she would have none of me for love or money. If this is benignity, Mr. Editor, let us have something else for a change.

Why should not our colleges be centres of science, to appropriate, to sift, and to impart all knowledge pertaining to the profession, even a Farmer Miles' specialities? "*Philosophia stemma non inspicit.*" A place where the old graduate might return and be rehabilitated and treated to all that is new in practice and strange in experiment; and he might possibly leave as a gift a morsel of that experience called by the profane a wrinkle, because it is mostly found with the old and toil-worn. You will say this means an expenditure of much money. Well, and money would be very proud to be spent in this way.

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## MELANOSIS OF THE SPLEEN.

BY A. H. SANTY, F.R.C.V.S., NORWICH.

I HAVE this day forwarded to the Brown Institution for inspection the spleen of an aged grey carriage-horse, the property of a lady in this city, and which I had this day destroyed. The spleen weighed two stones (28 lbs.), measured 2 feet 6 inches in length, and in breadth 1 foot 4 inches. I thought it might possibly be of interest to you and the profession, as I believe the disease to be Melanosis, of which we hear but little further than such and such an animal is the subject of melanotic tumours. I will describe the case from the time my attention was first called to the animal, which was on the 16th of June. I found him breathing rather quickly; pulse 60; temperature 105°, and sweating on the near side of the neck, chest, and shoulder, which was much hotter than any other part of the body. I thought it might be an epizoötic fever case, and prescribed accordingly. On the 18th all the fever was gone; temperature 100°; pulse 44; appetite moderate. I could detect no symptoms of disease, but there was a marked difference in the temperature of the near and off shoulder, the near being much hotter to the hand. I ordered tonics, good food, and gentle work. July 1st, my attention was again called to the horse, the coachman saying

he seemed faint and weak at his work, he previously being a high-couraged animal, but now he had to whip him, and when he came in from the gentle work which he performed, the sweat poured off in a stream from the near shoulder, arm, etc. I could *detect* no disease of any internal organ. I examined the corn, hay, water, drainage, ventilation—in fact, everything I could think of, and nothing could I find to account for the symptoms which at this period (beyond the peculiar sweating on one side and coldness of the other) consisted of inability to do the lightest work. I continued to give tonics, both mineral and vegetable. This went on until the 29th with little change; his work was only gentle exercise, but he would stand in the stable and sweat from the near side, and on the slightest exertion the perspiration would pour off him. On this date a diffused swelling appeared on the near knee. This was fomented, etc. On the 30th there was a great diffused dropsical swelling on the near side of the chest and the leg of the same side; the left jugular vein was full and prominent; the animal was very stiff and disinclined to move; temperature 103°; pulse 60; no appetite. I may state that there were a few small melanotic tumours under the tail. My diagnosis was that some obstruction existed to the proper return of the blood to the heart, as the heart's beat was almost inaudible. I recommended that the animal be destroyed, and on making a *post-mortem* examination directly, I found the enormous spleen, with a great many small melanotic tumours along the mesentery; rather a large one on the superior part of the heart amongst the fat, and scores of small ones under the pleura costalis. All the organs of the body were perfectly healthy with these exceptions. I came to this conclusion, that in the absence of any detectable organic disease in an aged grey horse, whether melanotic tumours are present externally or not, if such animal suddenly falls off his appetite and is indisposed to do his ordinary work without any other assignable cause, we might diagnose the case to be one of internal Melanosis.

[The immense enlargement of the spleen was due to melanotic deposit of recent date. This deposit had accumulated in nodules of various sizes, clustered together like bunches of grapes.

These nodules were comparatively soft, and a microscopic examination showed the black pigment granules irregularly grouped in the cells. The case is interesting, particularly from its symptoms.]

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## CUTANEOUS HÆMORRHAGE AMONG HORSES, DUE TO A FILARIA.

BY S. M. WILSON, M.R.C.V.S., ARMY VETERINARY DEPARTMENT, COLCHESTER.

I HAVE the pleasure to forward a report of a peculiar skin disease, which I have noticed since I took over veterinary charge of the horses of the 3rd K. O. Hussars. As you are aware, the horses are Hungarians, and vary in age from four to seven years. Should you be able to find space, and think the report worthy of notice in your Journal, I shall be very glad, and shall be much obliged if you can tell me the name of the disease, and its true nature.

Without any premonitory symptoms, I find blood flowing freely from various parts of the body, more especially about the neck, withers, shoulders, and sides. On washing away this blood, and clipping off the surrounding hair, I find, within the space of about an eighth of an inch square, four or five small punctures, which might be likened to the pricks of a pin. From these I find blood flows most freely. I think, however, that the blood coagulates more quickly than ordinary healthy blood. In some cases the bleeding ceases after the first day, in others it continues for three or four days. The part will then heal, and perhaps, though not necessarily, break out again in the course of a week, or maybe a month. I do not think the disease is contagious, as I find it in various parts of the stables, and not necessarily in adjoining stalls, nor confined to one stable. It appears in horses of all conditions, fat and lean alike, and both sexes suffer equally.

My treatment has been varied—I tried laxatives, followed by tonics; also tonics alone. External application as above:—

℞ Zinci sulph. ... ℥j.
Plumbi acetas. ... ℥j.
Aqua ... ... ℥j.

This was frequently applied, and the parts kept clean with cold water. I really think the horses which have been treated with the external application only, do just as well as the others—indeed, I have now given up the use of internal remedies.

Providing the spots do not interfere with the saddlery, I do not stop the horses' work. I may further remark that I do not notice the weather affects the cases at all. I have no microscope, so have not been able to make an examination of the blood, which I should like to do. The horses are in full work, and their daily ration has been as follows:—

Oats ... 8lbs.
Bran ... 1lb.
Hay ... 10lbs.
Straw ... 10lbs.

The oats and bran are slightly damped, as is also the hay.

I have never before, either at home or in India, seen anything like it; so shall be greatly obliged for hints on the subject. I have entered my cases in the books as Eczema. I have consulted with Mr. Rowland Taylor, M.R.C.V.S., who is the leading practitioner for many miles round here, and he tells me he has never met with like cases, so I am much inclined to think the disease peculiar to the breed of horses, or to the country whence they came.

[The disease alluded to by Mr. Wilson is a curious one, and is, we believe, unknown among the native horses of this country. We have seen a few cases in North China, among horses from India; but in Syria we have observed quite a number. The symptoms were those described by our contributor. The horses were apparently in perfect health. Little nodules suddenly developed on various parts of the trunk, especially on the back, and soon there streamed from them a thin jet of bright red blood, which coagulated in the sun into a hard crust over the little tumour, and proved a cause of sore back when situated beneath the saddle. The hæmorrhage was sometimes rather profuse. It is worthy of men-

tion that in the *Journal de Médecine Vétérinaire Militaire* for February, 1877, M. Drouilly gives a short notice of this disease as it appeared among a considerable number of Hungarian horses in the French army,and describes a microscopical filaria which he discovered in the *boutons hemorrhagiques*. In the *Recueil de Médecine Vétérinaire* for 1878 (p. 1145), that gentleman and M. Condamine, both veterinary surgeons in the French Artillery, describe the worm ; and M. Megnin, an accomplished veterinary helminthologist in the French army, adds some remarks of a more technical character. The worm found was always a female, no males having been discovered, notwithstanding the most careful search ; and its length varied from six to seven centimetres. It always contained myriads of larvæ, and it would appear that it is to expel these embryonic filariæ that the nematoid travels to the subcutaneous connective tissue, and pierces the skin. It is probable that it finds its entrance into the system when fecundated, in the same manner as its congener, the Guinea-worm, does, and makes its way to the surface of the body in a similar manner, after depositing the larvæ in the blood about to be effused. The adult filaria abounds in the marshy regions of Hungary, where it finds a congenial home. Davaine, who only knew of the worm by report, designated it the *Filaire hématique* of the horse ; but guided by its anatomical characters, Condamine and Drouilly named it the *Filaria multipapillosa*. It is very unlikely that this cutaneous hæmorrhage among the horses of the 3rd Hussars will be observed after this year.]

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## THE VALUE OF COLD WATER AFFUSION IN PUERPERAL APOPLEXY.

BY S. LAMBERT, M.R.C.V.S., MANCHESTER.

IF the enclosed case of recovery from Puerperal Fever* is considered sufficiently interesting, I would solicit its publication in the VETERINARY JOURNAL. I have had many cases of Puerperal Fever among my own dairy stock during the last ten years, but never saw a cow of my own or any other person's

* Puerperal Apoplexy?

recover after insensibility set in. The treatment I adopted in this case—that of dashing cold spring water on the cow's head for two hours without intermission, I think greatly aided the recovery. At five o'clock in the afternoon of the 10th of August, my cowman informed me that a fine, strong, six-year-old cow, that had calved three days previously, and showed signs of staggering all day, had finally, at three o'clock in the afternoon, fallen down in the loose box and could not get up. I found the cow down, unable to rise, eyes glazed, bowels constipated, and temperature 102⅔°. I immediately gave her 2 lbs. of Epsom salts, and 1 lb. of treacle; afterwards bled her, abstracting five quarts of blood. She rapidly became insensible, breathing stertorously, head hanging down, and eye insensitive to light or touch. While in this state I had cold spring water poured on her head without intermission for two hours, at the end of which time she became slightly conscious. I then gave her a gill of brandy, and continued the cold water for another hour. She rapidly became more conscious. I repeated the brandy, left a man up with her all night to continually apply cold water to her head. At five o'clock the next morning she was much better, and at eight o'clock her bowels were acting and she was able to stand, when she ate some grass; she is now ruminating, and, to all appearance, well. As I said before, in the course of an extensive experience among my own and other people's dairy stock, I never saw a cow recover from Puerperal Fever after once becoming insensible.

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## A CASE OF DISEASED HEART AND LIVER IN A HORSE.

BY W. SHIPLEY, M.R.C.V.S., GREAT YARMOUTH.

THE subject of the above disease was a chesnut, half-bred gelding, about eight or nine years of age: one that I had known from a foal, and which had latterly been used for carting and cab work. Some time during the latter part of last summer, I was requested to see him one night, but was unable to attend. My assistant, however, went, and as he described the case to me I presumed the horse was suffering from slight congestion of the lungs, con-

sequent on a severe day's work, he having been driven some distance. However, with the aid of a stimulant, etc., he was on the following day so far recovered that the owner considered it unnecessary for me to trouble any more about him, and he again went to work, until some time in the month of May of this year, when he came up to my stables to have his fore legs blistered, prior to being turned out. I certainly did not at that time observe anything wrong with him, except that he looked as if he had done a little too much labour, and his owner complained of his not doing his work so well as formerly.

After being turned out a few weeks, he was again brought up, as he was becoming emaciated; I then observed at once a peculiar haggard expression of countenance, and an irregular pulse of about sixty beats to the minute when he was quiet, with pulsation and thrill of the jugular vein, which I at first thought to be regurgitation of blood; these could be distinctly seen and felt, and the vein was much distended. On compressing the upper end of the vessel, and then passing the blood downwards towards the heart out of the vein, there was no return of blood into it; the jugular accordingly remained collapsed—clearly showing it was not, as was supposed, regurgitation. The mucous membranes were tinged a dirty yellow, and the breathing was accelerated. The horse became much distressed on the slightest exertion, and the pulsation and thrill of the veins much increased in number and force. On applying the ear over the cardiac region, a loud prolonged blowing systolic murmur could be distinctly heard; the second sound was peculiarly muffled and indistinct. Very slight exertion sufficed to considerably accelerate the heart's action, and to increase the bellows-like murmur; the heart could be distinctly seen beating against the side of the chest in a most irregular manner, sometimes at the rate of 100 per minute, then slower, and occasionally stopping altogether for a second or two. There was no distinct pulsation at the jaw. After excitement he would not feed for some hours, and appeared quite incapable of any exertion; but when perfectly quiet he would feed well.

I kept him in the stable until June 7th, but he made no progress towards recovery, and he was then turned out on a marsh

again, I having given an opinion that he was suffering from diseased heart and liver, and that it was useless treating him.

On the 5th of July he was again brought up from grass—a mere skeleton. There was œdema of all the dependent parts,—on the belly, scrotum, and legs, which pitted on pressure. His abdomen was of a tremendous size, partly from enlarged liver, and partly from ascites. The icteric tint of the conjunctivæ was much increased, and all the former symptoms were much more marked. He manifested intense thirst, and was suffering from violent diarrhœa. I kept him on for a few days to watch him, and some of my medical friends also saw him and were much interested with the case. He was then, on July 9th, by my advice, destroyed, and the following were the *post-mortem* appearances :—

On opening the abdominal cavity it was found to contain an immense quantity of blood-stained serum; the omentum was much wasted, and contained scarcely any fat. The liver was enormously enlarged, and weighed 50 lbs.; it was dark in colour, and section of its substance revealed the typical "nutmeg" liver of mechanical congestion, but no other disease that I could detect. The bowels were healthy. On removing one side of the thorax, the lungs were found to be very pale but perfectly healthy. The cavity contained a large quantity of pleuritic fluid. The pericardium contained a considerable quantity of blood-tinted serum. The heart showed marked fatty degeneration, being very large, pale, and flabby; its substance was easily broken down by pressure between the finger and thumb. Under the microscope the muscular fibres displayed an abundance of fatty molecules. All the valves were more or less atheromatous, but none were so much so as to be incompetent, excepting the semilunar valves of the aorta. On the outer side of each of these valves there were vegetations as large as a pea, which were yellow, and when cut, soft in the centre from fatty degeneration. These vegetations would effectually prevent the valves collapsing during the cardiac systole and would account for the systolic murmur of aortic obstruction. The aorta presented on its inner surface numerous streaks and patches of fatty degeneration; the natural elasticity of the vessel was greatly impaired.

## ON THE ADVANTAGES OF CONTINUOUS IRRIGATION IN THE TREATMENT OF SERIOUS INJURIES AND DISEASES.

BY GEORGE FLEMING, F.R.C.V.S., ARMY VETERINARY INSPECTOR.

I AM not certain whether the great advantages to be obtained from the constant application of cold water to serious injuries have been appreciated by veterinary surgeons in this country, as there is but little evidence—none certainly in books—to show that it is frequently resorted to. And yet of all the therapeutical agents I have ever had occasion to employ, it has, in certain circumstances and cases, been by far the best, the cheapest, and the most easily applied ; while for the animal patients it has proved the most soothing and humane treatment—assuaging pain and rapidly restoring them to health.

For more than twenty years I have steadily adhered to the employment of continuous irrigation in the treatment of slight, as well as the most serious injuries, and also diseases—chiefly those of a surgical character; and my success has been so marked and so highly satisfactory, that I feel impelled to draw the attention of those members of the profession who have not tried it, to the benefits to be derived from its adoption. Of course, cold-water bandages, douches, syphon leg-fomentors, and pedluvia have for many years been used, and with more or less success ; but in many cases they do not at all fulfil all the necessary requirements. They fail in essential particulars, and more especially in that the supply of water to the part is neither sufficient in quantity nor yet continuous ; and this insufficiency and intermittency effect but little good, if in some instances they do not work harm. In my hospital stable there was always a stall or loose-box—two, if possible—near the water-tap, and to this a sufficientl, long piece of india-rubber tubing was attached, the main piece of tubing being large enough in calibre to allow two smaller pieces to be fastened to its free end, if necessary, and thus supply two boxes or stalls, or apply water to two regions of the same patient.

The mode of applying the cold water varies somewhat according to circumstances. When any part of a limb has to be

irrigated, if there be a wound, this is covered by a piece of lint, the wound being dressed with carbolic acid or any other dressing; then the leg is swathed in pieces of blanket, between which the end of the tubing is placed, the tubing itself being supported by attachment to the surcingle, and through staples along the wall of the box to prevent its being trodden upon. For very large flesh wounds no swathing may be necessary, provided the water can be diffused over their surface. In all cases, however, a pretty full stream of water is allowed to flow night and day, the animal being either in slings, or otherwise prevented from lying down.

An enumeration of all the serious cases—to say nothing of the simpler ones—I have treated by continuous irrigation, would be beyond the scope of the present paper. I may mention, however, that the majority of muscular, tendinous, and ligamentous injuries, fractures, wounds simple and contused—especially of joints, inflammation of vessels—when accessible—and joints, as well as Laminitis, can be most successfully and promptly cured by this hydropathic treatment.

Some years ago I published, in a contemporary journal, the history of a most formidable case of compound dislocation of the fetlock in a horse—the only case, I believe, on record, which was perfectly cured by continuous irrigation. Fracture of the metacarpal and metatarsal phalanges, and of the large metacarpal bone, has been successfully treated, and in a shorter time than by any other means with which I am acquainted. By the aid of the high-heeled patten shoe and continuous irrigation, serious sprains of flexor tendons and suspensory ligaments comparatively quickly recover.

But it is in cases of open-joint and Arthritis that this treatment offers the greatest advantages. Two of my most recent cases are illustrative of this.

Early last year, while my regiment was stationed at St. John's Wood Barracks, a very valuable charger, when at exercise, ran away, and turning the corner of a road suddenly, fell with great force on his side. The injuries he sustained appeared to be trifling, but in the course of a day or two lameness was manifested in the left hind leg, and at the same time a large fluctua-

ting tumour was developed in front of, but rather below, the patella. Fomentations were applied, but the tumour kept increasing, and at last it was decided to open it, as it was surmised that it contained only serum. A small puncture was made at the most dependent part, and a large quantity of blood-tinted, though rather viscid, serum escaped. To my astonishment and dissatisfaction, next morning there was intense lameness, the patellar articulation was much swollen and very painful—particularly on the inner aspect, and there was a copious discharge of synovia from the wound which had been made to evacuate the fluid in the tumour. The usual stereotyped treatment was pursued for several days, with a view to test its efficacy. The synovial discharge, however, increased, and it daily became more obvious that the patellar capsule had been torn at the time of the accident, or so injured that it subsequently sloughed either before or immediately after the serous sac was opened. The entire joint became greatly swollen, the swelling extending along the abdomen to the chest, the limb was kept in perpetual movement, the pulse and respiration testified to the advent of sympathetic fever and great pain, and the animal did not care to eat. When the external wound appeared to be closed, the tumefaction gained greater dimensions, and a fistulous opening appeared high up in the inguinal region, from which a copious escape of synovia took place. As the case threatened to be serious, it was decided that the time had arrived to commence irrigation. The stifle joint is the most difficult of any to bandage or swathe; yet with patience and some ingenuity it, as well as the entire limb, was enveloped in masses of blanketing, and cold water was kept saturating it the whole night and day. In a week a great change had been effected; the tumefaction had left the joint, as well as the lower part of the body; there were no symptoms of pain or general disturbance; the limb was kept at rest, and the discharge of synovia from the wound was trifling. It is worthy of remark that this discharge was intermittent, for though it collected beneath the skin on the inside of the patella, it did not begin to escape externally until there was a great quantity in the form of a soft tumour. When the inflammation was completely subdued by means of the cold water, this was

discontinued. The tumour was then completely evacuated, the skin on the inside covered with adhesive mixture, upon which was placed a thick pledget of tow to make pressure on the part of the capsule in which it was supposed the opening existed, and this was secured by long strips of pitch plaster, which firmly retained it. After this application the tumour did not re-form, the discharge of synovia from the external wound was no longer observed, and in about another week the horse had recovered from the injury. In a fortnight he was at duty, and since then has remained perfectly sound, without a trace of the accident, and his action as free as ever.

The other case was even more decisive as to the advantages of continuous irrigation. It was that of a charger, which, on the march from London to Windsor, twelve months last May, stumbled and broke both his knees when near the last-named town. The injury to the left knee was confined to the skin, but that of the right knee was of the most serious character. The skin and great extensor tendon of the metacarpus were completely divided, the former being lacerated and contused over a wide extent of surface; the capsular ligament of the joint proper was cut across to the extent of nearly four inches, so that when the knee was flexed, three or four fingers could easily be passed between the articular surfaces. The divided portions of skin, tendon, and capsule hung in shreds, and the still solid surface was furrowed by and stuck full of grit. The injury looked so alarming, and the case altogether so hopeless, that, though not given to despair in similar circumstances, I was somewhat inclined to recommend that the animal should be destroyed. However, it was resolved to give continuous irrigation a trial in this desperate case, for a few days at least. The horse was moved into a loose-box, head secured to the rack, the wound freed as much as possible from foreign matters, the shreds of tissue removed from it by means of scissors, a thick pledget of carbolised lint applied over the whole surface of the knee, and bundles of tow and several woollen bandages placed around it and above and below. The end of the tubing was inserted in the middle of the tow, and the entire mass was kept drenched with cold water for a month—the stream never being checked night or day except when the bandages, lint, and tow

were removed and reapplied. Notwithstanding the intense severity of the injury, so soothing, or rather benumbing, was the cold water, that the horse did not seem to experience any pain, rarely flexed the knee, and usually stood as firmly on the right as the left leg—a state of affairs in striking contrast to what is observed in the treatment of open knee-joint by other means. The pulse was never affected, the appetite remained unimpaired, the animal preserved his gaiety, and no one unacquainted with his history could have believed he had sustained such an appalling accident. For about ten days the whole of the carpus was a good deal swollen ; all the tissues which had lost their vitality by the contusion sloughed away in the course of four or five days, leaving nearly the entire face of the carpus denuded of skin. Contrary to what might have been expected, granulation of the healthiest description made rapid progress, and though there was a somewhat profuse discharge of synovia, yet the process of repair was so active that this soon ceased, and at the end of a month cicatrisation was nearly completed. The irrigation was now stopped, and a light bandage with dry carbolised dressings applied over the remains of the wound. The joint could be flexed with perfect freedom ; indeed, too much for the safety of the case, as fears were entertained that, in consequence of the cicatricial tissue not having become sufficiently consolidated, the wound might be re-opened. An iron leg-splint was therefore resorted to, in order to keep the joint immovable. As I am not aware that this contrivance is generally known to the profession, and as I have reaped great advantage from it for many years, I venture to describe it. It is a simple three-eighths of an inch thick, round iron rod, sufficiently long to reach from the ground to near the elbow. Along the course of the rod are punched about half a dozen "slots" or openings, through which to pass leather straps that pass around the limb wherever deemed advisable. At the upper end are two horizontal wings, three or four inches long, that pass around the arm and keep the splint in its position behind the leg,—the inner surface of these wings must be well stuffed and covered with soft leather to prevent abrasions. The lower end of the rod is square, the tip being bent somewhat backwards, to fit and lock into a corresponding square hole

punched in the middle of the heel of a rather long bar-shoe that is nailed on the foot. The rod must be bent or set to fit the foot and leg, which it should not really touch except at the wings on the upper end. The heel of the shoe should be bent upwards, so as to prevent the lower end of the rod from coming in contact with the ground.

I have usually found two straps, one above, the other below the knee, quite sufficient to fix the limb immovably, the leg being protected from the strap by a thick bandage. The splint is readily removed and replaced without taking off the shoe, or even raising the foot. When immobility of the leg is required, nothing better or simpler than this splint can be devised.

In conclusion, I would recommend veterinary surgeons to try continuous irrigation, the antipyretic and anodyne effects of which have so very often rendered me services quite as marked as in the two cases I have ventured to give an outline of above.

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## Editorial.

### THE IMPORTATION OF CONTAGIOUS DISEASES FROM THE UNITED STATES OF AMERICA.

The suppression of contagious diseases among animals has become strangely mixed up with politics of late years in this country. For more than a generation the most destructive scourges reigned rampant in the three kingdoms, and the national health and wealth were seriously compromised; but politicians were dumb, or cared not for the destruction that was sapping the foundation of our agriculture, and indeed of our national prosperity. It was only in presence of the Cattle Plague in 1865, when the total extinction of our bovine stock was threatened, that Parliament began to consider whether, after all, these maladies were not worthy of attention; inasmuch as not only did they mean ruin to the breeder and rearer of stock, but they also seriously diminished the food supply of the people, and therefore increased its price. The measures which were then and have since been adopted, had for their object the extinction of two or three of the more damaging contagious diseases in Great Britain, and they have so far been successful. But this success has not been due to any considerable extent to politicians; it has rather been owing to a successful and continued war waged against those politicians who find it to their interest to *pose* as friends of the working man, as champions of the toiling masses, as advocates of the British consumer. When it was discovered that the United States of America no more deserved exemption from the restrictions applicable to plague-haunted

countries than the most dangerous of these (though every effort was made to conceal the existence of contagion in the States), these so-called friends of the toiling multitude—they were then in parliamentary opposition—strenuously opposed the application of the sanitary laws in force with regard to unclean countries; and had their views prevailed, the United States of America would have poured into our ports cargoes of cattle, sheep, and pigs, infected with the most dangerous and deadly disorders. Fortunately, their efforts were unsuccessful: the facts were too many for them, and they were defeated.

The United States of America are now no more to be considered safe than the most pest-ridden kingdom of Europe. Every post confirms the opinion we gave when those who should have known better declared there was no contagious disease on the American continent; and there are few now who will maintain that traffic in live cattle with these States is not dangerous, unless every precaution is adopted at our ports of disembarkation. But the *pseudo* friend of the working man, of the British consumer, must still *pose*. He asserts that only very few of the States are infected, that by far the larger number are free from contagious diseases, and that therefore there should at least be unrestricted importations from these. Such men surely know little of the scourges with which they would deal so lightly, nor yet of their history. They cannot know that Contagious Pleuro-pneumonia, which prevails we know not to what extent in the States, was little more than a century ago only known in Central Europe, and is now ravaging every quarter of the globe—having been disseminated everywhere solely through traffic in cattle. Granted that the whole of the States are not yet infected, that is no reason why those still clean should be considered safe to deal with. No precautions are taken by the American Government to protect those States reported as exempt (though the existence of this exemption may be doubted), nor yet have any general measures been devised to extirpate contagious disorders in the States in which they prevail. In no country in the world claiming to be as civilized as the United States, is veterinary science more neglected; and until this science is recognised by the American Government, and the advantages to be obtained from it in the suppression of contagious diseases made fully available, that country must remain as dangerous to her neighbours—so far as the importation of animals is concerned—as Russia or any other of the kingdoms on the proscribed list. If certain States are still uninfected, this will assuredly not be for long; for the cupidity, carelessness, and dishonesty which characterises international—and even interprovincial—traffic in animals will, as trade increases, carry infection everywhere. As we predicted years ago, that Cattle Plague of the American continent—the so-called Texas Fever—is extending itself there somewhat rapidly, and we even prognosticated that it would reach our own shores. For this reason it was that the malady found a place in "Sanitary Science and Police," and we again draw attention to the fact, as cattle have arrived at Liverpool said to be affected with this deadly disorder. As to the necessity for maintaining the present Act of Parliament in all its stringency, with regard to American importations, no one who knows anything of the sub-

ject would dispute; and we earnestly trust that those Ministers who are charged with this important duty—and who are now so thoroughly convinced of the value of the Act, though when in opposition they exerted their utmost to prevent its becoming law—will not be moved by the solicitations of men who do not understand the subject, to relax the measures which preserve us from receiving fresh quantities of contagion, while we are endeavouring, and satisfactorily, to free ourselves from that which has been allowed to revel for so many years among our own flocks and herds. Surely the terrible losses this country has sustained, and is even now sustaining, together with the restrictions imposed upon our own breeders and graziers at the present time, would suffice to open the eyes of less intelligent opponents of exemption from contagious diseases than they who pretend—but without reason—to be the friends of the "British consumer" of animal food. The agitation carried on by these men is political, not patriotic.

Let the United States produce a clean bill of health with regard to her domestic animals, and she will have no reason to complain of the hindrances she now experiences in her traffic with us. To produce this bill of health will cost her money and trouble, as it is doing other countries; but it will never be produced so long as she is allowed to send abroad, without let or hindrance, cargoes of pest-stricken animals.

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## "STOMATITIS PUSTULOSA CONTAGIOSA" OF HORSES.*

BY PROFESSOR FRIEDBERGER, MUNICH VETERINARY SCHOOL.

IN vol. iv. of the *Archiv für Wissenschaftliche und Practische Thierheilkunde* (p. 334), Messrs. Eggeling and Ellenberger described an acute contagious pustular exanthema, and gave the results of their inoculation experiments.† These authors, in concluding their remarks, observed that it was quite possible that many diseases put down as *Impetigo labialis* and follicular inflammation, and other diseases attacking mucous membranes covered with tesselated epithelium, have been falsely designated; and therefore they wished others to note the frequency of these questionable diseases, in order to ventilate the subject.

A short time afterwards, such an opportunity offered itself to me. Although the material was limited, still the results lead me only to substantiate and repeat what these gentlemen have already published.

On the evening of March 4th, 1879, Mr. N——, horsedealer at N——, bought a nine-years-old gelding to the clinic of the Munich Veterinary School, with the following history. He bought the horse, with another, from Count W——, about eight days previously, but they had remained in the Count's stables until March 3rd, when he sent for them. When they reached home he noticed that one of them slavered from the mouth a good deal, and refused its food. Afterwards Mr. N—— examined the mouth more closely, and found numerous abrasions on the upper lip and in the mouth, and that the submaxillary glands were swollen. He was consequently afraid to keep it in his stable until he had medical advice.

The phenomena which the disease presented, together with the difficulty

* Translated from the *Deutsche Zeitschrift für Thiermedicin*, band v., heft 5, p. 265, by G. A. B.

† Translated in the VETERINARY JOURNAL, vol. vii., p. 291.

of making a thorough examination of the case that night, caused the assistant to defer an opinion till the morning.

On March 5th our examination gave the following *status præsens*:—Condition good; hair glossy and smooth; on the upper lip, near its border, is a nodule about the size of a cherry-stone, covered by a dark-brown, moist, thin scab. After carefully removing the scab we found the surface of the nodule covered by a thin layer of purulent exudate, and under this there was a flat, pale-red, even-bordered ulcer. On the lateral wing of the nostril of the left side there was a small nodule, covered by a thin dry scab, and about two centimetres from it another small cavity destitute of epidermis. External temperature normal. Submaxillary glands on the right side the size of beans; on the left somewhat swollen, movable, and slightly painful when pressed. Schneiderian membrane highly injected, and a serous exudate flowing from the nostrils. Pulse forty per minute. The heart's beats distinctly felt; their tone normal. The internal temperature (at rectum), 38·6° Cent.—the previous evening it was 39·3° Cent. Respirations tranquil (twelve to the minute); no cough, but a deep, strong, loose cough is easily produced artificially. Percussion and auscultation revealed nothing abnormal. The temperature of the mouth was raised, and a transparent mucous secretion flowed from it. The mucous membrane was studded with numerous ulcers in various stages. Upon the mucous membrane of the lips, as well as the gums, there were some groups (from two to seven) and some isolated circular prominences about from two to three millimetres high, and the same in diameter at their base. The latter was surrounded by hyperæmic zone. Some had been transformed into circular ulcers, with a central depression; the free surface hyperæmic, shining, and granular. The border was covered by a greyish-white or yellowish-white ring (resembling squamous epithelium), which was easily removed, and the surface beneath presented exactly the same appearance as the central part of the ulcer. Microscopically examined, this covering proved to be swollen epitheliod cells and pus corpuscles.

These circular ulcers were most abundant on the superior and inferior labiæ, on the gums (especially the alveoli); also on the *frænum linguæ*, cheeks (left side four, right side six), and three on the left side of the tongue, near the apex.

All the ulcers did not show the whitish ring around the margin, nor the cupped depression in their centre. Some were flat and hyperæmic; others had a yellowish-brown or dirty-yellow crust, and the superficial loss of substance was nearly filled up. Others had become united into one (confluent), but presented the same character. Under the canine tooth of the right side, and at three places on the inferior lip, there were large ulcerations, the size of a sixpence, with great loss of substance, two to three millimetres deep at the centre, which in some cases were filled with a cheesy matter mixed with particles of food. Most of them, however, were of a reddish-grey colour, clean and coarsely granular, firm to the touch, and did not readily bleed.

The animal fed well, although saliva flowed freely from the mouth. Excretions normal, and otherwise as usual.

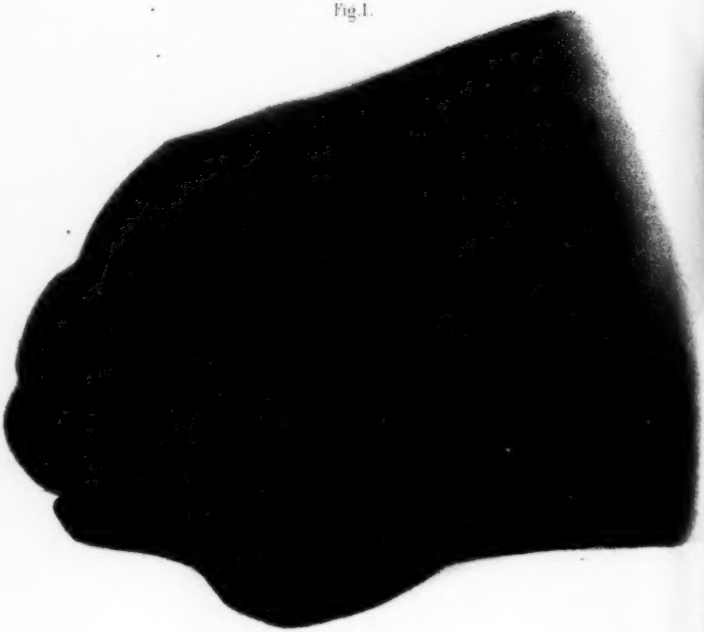
From these symptoms, together with the characteristic changes of the oral mucous membrane and common integument (see illustrations by Herr Kitt, a student at the Munich School*), we did not for a moment doubt that we had to deal with the disease Eggerling and Ellenberger termed "Stomatitis Pustulosa Contagiosa," and we were therefore in a position to assist in settling, or at least in ratifying, these authors' conclusions.

The further course of this case was as follows:—

*March 6th.*—Pulse 40, temperature 38·3°, respiration 12; Schneiderian membrane red; submaxillary gland still swollen. On the upper lip, near the

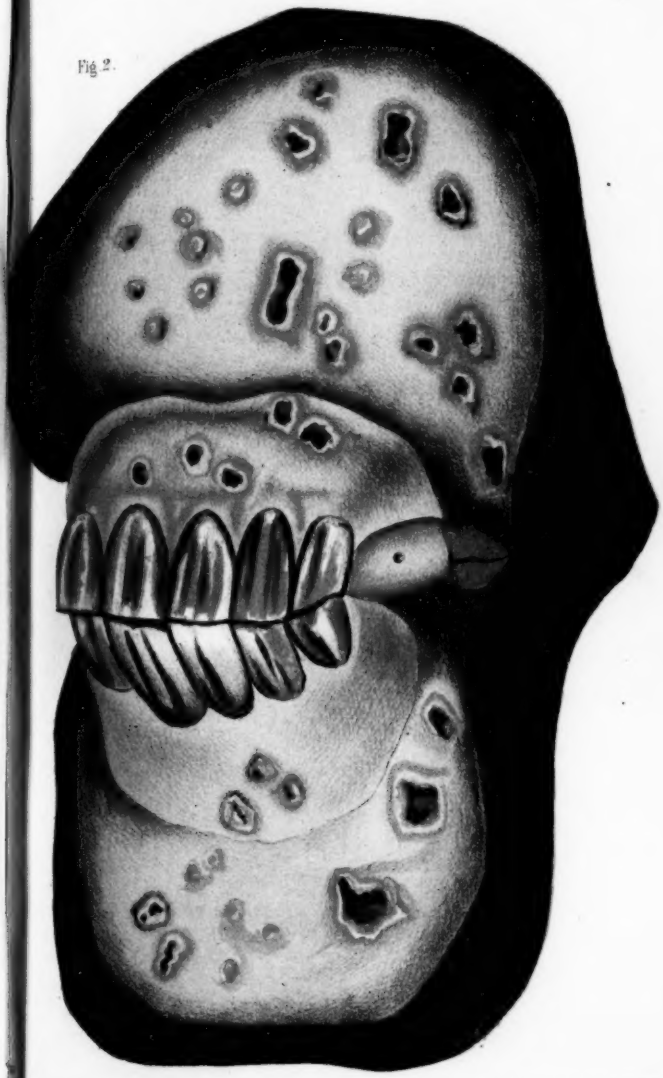
* These illustrations are inserted here.

Fig. I.



Friedberg gez. Stuppatitis

Fig. 2.



angle of the mouth, there were some new miliary nodules, some of which had commenced to ulcerate. The ulcers in the mouth had lost their greyish-white ring, and the redness of the mucous membrane had somewhat increased.

*March 7th.*—Pulse 36, temperature 37·9°, respiration 12 to 14; Schneiderian membrane normal; submaxillary glands as on yesterday. The confluent ulcers in the mouth were larger, but their surface was flat and red. Most of the small ulcers were covered with a loose, thin, dirty-yellow crust, and appeared to be quickly healing. Those on the tongue were nearly well, and most of the prominences had disappeared.

*March 8th.*—Pulse 36, temperature 37·8°, respiration 12. The ulcers were progressing, the hyperæmic zone around them could no longer be seen. The submaxillary gland is larger, knotty, and tender. The animal still feeds well, and Unguentum Hydrargyri was vigorously rubbed on the skin covering the swollen gland.

*March 9th.*—Pulse 32, temperature 37·9°, respiration 14. No change.

*March 10th.*—Pulse 32, temperature 37·7°, respiration 12. The nodular elevations in the mouth were nearly level with the normal mucous membrane, and their ulcerated surface had nearly healed; most of them were covered with dry scabs. The lost tissue, caused by the ulcerations on the superior labiæ, was replaced by granulation. The ulcers on the common integument even healed, although the pigmentation was not so deep in colour as in the normal skin. Both the submaxillary glands were smaller.

There were four fresh vesicles about the size of beans on the upper lips. They had a pale-yellow colour, were transparent, and surrounded by an intensely hyperæmic zone. When examined closely, a small white spot could be seen in the centre of each vesicle, in which was an opening of one of the mucous glands of the lip. When lanced, a slightly cloudy tenacious fluid escaped. Under the microscope this fluid showed epithelial cells and pus corpuscles.

*March 11th.*—Pulse 36, temperature 37·9°, respiration 14. One of the fresh vesicles was covered with a greyish-white, but loose crust (like squamous epithelium), and appeared somewhat collapsed; its contents more opaque, and the red ring around the base more extended. The contents of the remaining vesicles were used for inoculation purposes.

*March 12th.*—General appearances as before. No fever. At the seat of the above-mentioned vesicles, or rather pustules, there was a yellow crust found. The hyperæmic ring was disappearing. The ulcers in the mouth had completely healed, redness gone, and the salivary secretion diminished. The depressions were filled up. The submaxillary gland was much reduced in size.

*March 14th.*—The mucous membrane of the mouth had completely healed. The left eye was now affected.*

The integument of the upper lid was puckered, the lids nearly closed; conjunctiva highly injected, shining, and swollen; tears flowed from the eye, and so softened the epidermis at the borders of the lids that it threatened detachment. At midday, the skin over which the tears flowed lost its pigmentation and became excoriated. No nodules or ulcers could be detected in the conjunctival sac.

*March 15th.*—The redness and swelling of the conjunctival membrane increased, as well as the amount of fluid secreted, together with the intolerance of light. The character of the secretion was first sero-mucous, then muco-purulent. The excoriation of the skin was more extensive.

* We ought to mention that a horse was placed on the left side of this one, on March 5th; it was successfully inoculated on the 10th, and on the 14th the disease was at its height. We took no precautions to prevent contact between these animals.

*March 16th.*—The borders of the eyelids had lost their pigment, from the secretion inflammatory products adhering to them. The conjunctiva palpebrarum and sclerotica were more swollen and injected. Nodules, etc., could not be seen. The cornea remained transparent, and the intolerance of light was diminished.

*March 17th.*—The pathological processes in the conjunctival sac had decreased. Nothing had lately been seen on the mucous membrane of the mouth, but to-day two completely-formed pustules were noticed on the upper lip. They were pearly-grey in colour, and were filled with a muco-purulent fluid which, under the microscope, presented a few tesselated epithelium cells and pus corpuscles in abundance. No fungus fibres, rods, or micrococci could be detected.

*March 19th.*—The pustule which was left intact had spontaneously ruptured, and was partially emptied. The base was surrounded by a white ring, composed of swollen epithelial cells and degenerated shrunken pus corpuscles; and this ring was again surrounded by a hyperæmic zone exactly the same as those observed in the primary eruption.

*March 20th.*—The swelling, hyperæmia, etc., of the left eye had considerably abated. The integument covering the lids was dry, and commencing gradually to form its epidermal covering.

*March 22nd.*—The large deep ulcers in the mouth had healed and star-shaped cicatrices remained; otherwise nothing could be seen. The excoriated skin was somewhat lighter in colour; otherwise it was normal. The submaxillary lymphatic glands were about the size of beans. The animal appeared perfectly healthy.

### Inoculation Experiments.

For these we had three horses, two cattle, two sheep, one dog, three rabbits, two fowls, and four pigeons.

#### *First Series.*

A. *The material used was the secretion from the oral mucous membrane and ulcers of Mr. N——'s horse, two days after it was admitted into the hospital.*

Most of the inoculations were performed on March 5th, between 2.30 and 4 p.m.

*Experiment I.*—The mucous membrane lining the labiæ of an old anæmic horse (purchased for operations) was scarified, and the virus well rubbed in.

*March 6th and 7th.*—The parts were slightly reddened.

*March 8th.*—Redness had all disappeared again.

*March 10th.*—At the union of the lip and gums on the right side were four circular ulcers, varying in size from a millet-seed to a lentil, and placed close together. They were superficial, the borders flat, surface dirty-yellow in colour, and surrounded by a slight hyperæmic zone. The same lenticular ulceration was visible on the upper gums of the left side.

*March 11th.*—Ulcers enlarged, the inferior four ulcers had become confluent, and above them there was a firm hyperæmic nodule. There was no increase of temperature noticed, nor were the secretions increased. Appetite good, and no lymphatic swelling.

*March 12th.*—The hyperæmic nodule noticed yesterday had changed to a yellowish-grey crust. Under the inferior left canine there had formed a new group of small, round, partially confluent ulcers. Their centre was of a yellowish colour; this was surrounded by a greyish-white ring, and this again by a hyperæmic zone. The same changes had taken place in those on the lip.

*March 16th.*—The ulcerated spots were now more plainly seen. Their surfaces were clean, red, and shining.

*March* 20*th.*—The ulcers continue to heal, although the process is slow. This can probably be accounted for by the age and condition of the animal. Nothing else was noticed; so the animal was killed for the students to operate upon.

*Experiment II.*—A poor, old, pregnant cow was inoculated on various parts of the mucous membrane of the mouth and vagina, by scarifying them with an inoculated lancet.

During the night (March 5th-6th) she aborted.

*March* 12*th.*—That is, seven days after inoculation, we observed several miliary, circular, flat pustules, surrounded by hyperæmic rings, at the seat of inoculation.

*March* 15*th.*—After the central crust was detached, the surface of the ulcers appeared flat, red, and glistening, and surrounded by a relatively thick ring of dried matter, enclosed in one of hyperæmic tissue, showing it to be quite characteristic of the disease.

During the next four days the ulcers continued to enlarge; then they slowly healed in the course of six days.

*Experiment III.*—A poor weak, ill-nourished, half-bred merino sheep was inoculated on the external and internal surface of both ears, as well as on the mucous membrane of the mouth and gums. Some of the inoculations were performed by means of a charged lancet, others by scarifying and rubbing in the veins.

*March* 11*th.*—Five days after inoculating, we found a small, irregularly-circular ulcer on the internal surface of the ear. Its surface was of a dirty-yellow colour. It quickly healed. This was all that was seen.

*Experiment IV.*—A small poodle dog was inoculated on the mucous membrane of the mouth, nose, and abdomen, with negative results.

*Experiments V. and VI.*—The internal surface of the ears and legs of two rabbits was scarified and inoculated. The result was only slight suppuration at some of the places, with little loss of tissue. These quickly healed, and afforded nothing characteristic.

*Experiment VII.*—The comb of a fowl was scarified, etc., with negative results.

*Experiments VIII. and IX.*—The eyelids of two pigeons were inoculated, with the same results as the last.

B. *The material used for the following experiments was taken from a vesicle on the mucous membrane of Mr. N——'s horse, on March* 10*th.*

*Experiment X.*—The second horse mentioned above, which Mr. N—— obtained from Count W.——, was a ten-years-old, dark-chestnut gelding. It remained in the stable a day longer than the first horse, viz., to March 5th, before it was brought to the institution, suffering—as the owner thought—from the same malady as the other.

Our examination revealed a complete absence of fever; the horse's condition was good, the submaxillary glands were slightly swollen; Schneiderian membrane reddened, and a slight serous discharge flowed from the nostrils. The owner was struck by the intense redness of the mucous membrane anterior to the *frænum linguæ* (which is frequently the case when in health), and some miliary, whitish-yellow, pellucid, firm but fluctuating vesicular elevations on the mucous membrane of the *labia superioris*, which, in reality, were nothing more than "*retention cysts*," resulting from the orifice of the mucous glands of the lip being plugged, so that the normal secretion was retained. These he had confounded with the pustules in the mouth of the other animal. When these cysts were pressed between the fingers, an albuminous-looking fluid was discharged.

We placed this horse on the left side of horse No. 1, separated only by means of a bale, in order to test the contagious influence of the virus. The

animals were allowed to stand thus until the 10th of March, but with negative results, so far as the appearance of the disease was concerned. We therefore inoculated the animal on March 10th by scarifying the mucous membrane of the superior labia with a charged needle.

At the time of inoculation the pulse was 36, and respirations 12 per minute, the temperature 38·3° C.

*March 11th.*—Pulse 36, temperature —, respiration 12. At mid-day the horse refused his food. At four o'clock he was shivering, and had a small, regular pulse 60 per minute; at five p.m. it was 90, and the temperature 40·9° C.; respirations 36, p.m., more difficult and abdominal. The visible mucous membranes, especially the Schneiderian, were more injected. Auscultation revealed increased vesicular murmur. Percussion gave a full tone, slightly tympanitic at the inferior third of the left lung. The head was depressed, and the animal appeared dull and listless. Excretions normal.

*March 12th.*—Pulse 52, temperature 39·3°, respiration 16. The abnormal phenomena in the respiratory apparatus had decidedly diminished; the appetite was better and the animal livelier. The temperature of the mouth was increased, and on the mucous membrane of both labiæ and gums we observed some small red spots, and several nodules about the size of poppy-seeds.

*March 13th.*—Pulse 48, temperature 38·6°, respiration 12-14. The animal coughed occasionally. There was a slight exanthema commencing on the mucous membrane of both lips, especially where they join to the gums, and at the angles of the mouth. There were also some sharply-defined, firm, hyperæmic nodules, varying in size from a millet to a hemp-seed, some being isolated, others in groups of 20 to 24. Several of these had commenced to form vesicles on their centres; others were already formed, and contained a whitish-yellow fluid; whilst others, again, had changed to bluish-grey pustules. The mucous membrane anterior to the *frænum linguæ* was intensely red. The inferior (posterior) surface of the tongue was covered with groups of nodules, some of which were covered with a soft, yellow crust; others, where the crust had been rubbed off, presented an ulcerated surface. Temperature of the mouth increased, the mucous membrane very moist, but not sufficient to cause salivation.

In the evening, pulse 48, temperature 38·5°, respiration 14.

*March 14th.*—Fever had quite disappeared. Pulse 40, temperature 37·9°, respiration 12. The nodules continued changing to pustules.

*March 16th.*—Nearly all the nodules had become pustules, and most of the latter had dried into yellowish-grey crusts, or these had been removed and left a small, flat, red ulcer. At those parts where the nodules were closely grouped together, as on the *frænum linguæ*, a confluent ulcer remained.

In this case, the ulcerations were superficial, and no loss of substance occurred; nor did the process extend to the common integument. The exanthema did not present such a characteristic appearance as in horse No. 1. The nodules were small, and remained so, pustules only forming at the raised centre; consequently little loss of substance occurred. They healed remarkably quickly; the epithelium was often replaced and the hyperæmia had disappeared before the flattened elevations had vanished; so that, by March 20th—seven days after the eruption was seen—scarcely a trace of the morbid processes was visible.

The contents of these pustules were also examined microscopically, and care taken to prevent, as far as possible, any extraneous particles becoming mixed with them. We noticed isolated pus corpuscles—from 20 to 40—in the field, and some clusters of the same aggregated together; many were undergoing granular degeneration. There were also four short, delicate, immovable rods, 0·005-0·007 mm. long; also some epithelial fat which I

can only look upon as a foreign vegetable agent (*septothrix buccalis*), notwithstanding all the precautions we took to prevent their presence.

*Second Series of Experiments.*

*The material used for these was the discharge from the ulcer and fluid from the mouth of the horse used for Experiment I.*

The inoculations were performed on March 12th.

*Experiment XI.*—The cow which was used for Experiment II. was inoculated on the mucous membrane of the inferior and superior labiæ, after first wiping it with a soft cloth, sacrifying, and then applying the virus.

On March 16th the scarified places on the labia superioris presented hyperæmic nodules, one of which quickly ulcerated and healed; the other was larger—about the size of a sixpenny-piece—and was ten or twelve days before it was covered with epithelium again. No other disturbance was observed.

*Experiment XII.*—The mucous membrane of the upper lips of a strong well-fed sheep was scraped and the virus applied; the lower lip was punctured with a charged lancet.

*March 13th and 14th.*—Nothing particular was seen.

*March 16th.*—The mucous membrane was hyperæmic, with papular elevations on its surface, some of which had already commenced to suppurate.

*March 17th.*—Some of the papules were covered with yellowish-grey crusts; when these were removed, beautiful ulcers were seen; these soon enlarged and became confluent, forming an ulcerated surface 2 cm. long and 1 cm. broad, which remained till March 20th. The margins were slightly swollen, uneven, and red. The surface was covered by a cheesy, yellowish-grey crust, and when this was removed it presented an intensely red granular surface. The same phenomena were noted on the labia inferioris, but not so extensive, nor was the loss of tissue so great.

During the next two days the ulcerated surfaces enlarged. They then became clean, flat, and quickly healed—those on the upper lip on March 28th, those on the lower on April 3rd.

*Third Series of Experiments.*

*The material used was the contents of the pustules of the dark-chestnut gelding used for Experiment X.*

*March 13th.*—The day on which the material was taken, we inoculated a dog (which had been previously inoculated), a rabbit, two pigeons, and a fowl, but the last alone showed symptoms of the disease.

*Experiment XIII.*—The fowl was inoculated under the tongue, and also under the epidermis on both sides of the comb, with a charged lancet.

Nothing was detected during the course of eight days, so we began to doubt whether our experiment had succeeded. However, the fowl suddenly became dull, listless, and lay about on the ground; therefore we continued our observations, and on March 24th found a small miliary, sharply-defined, firm, and intensely hyperæmic nodule, corresponding to the spot where we inoculated it under the tongue. It was surrounded by a broad and slightly reddened zone. At the seat of inoculation on the left side of the comb there were two lenticular pustules placed close together. The one, anteriorly situated, looked—from its pale, white shining colour and umbilicated appearance—like a variolous pustule; whilst the small posterior one was greyish-white and accuminated. There was also a greyish-white, flattened pustule on the right side of the comb, covered by a slightly reddened crust.

When the variolous-looking pustule was pressed, a somewhat tenacious, albuminous, and slightly-cloudy fluid escaped. This, when examined mi-

croscopically, presented some tolerably uniform granular white blood-corpuscles, from 50 to 100 being in the field at the same time. They were either isolated or in clusters, the latter being more degenerated and mixed with masses of dark immovable granules.*

*March 25th.*—The nodule in the mouth was now about the size of a poppy-seed, and covered with a yellowish-grey crust. The zone around it was smaller and paler. The two pustules on the left side of the comb had become one, 10 mm. long and 6 mm. broad. The anterior (oldest) part was drying, and its yellow crust loosening; whilst the pearly-grey, flat posterior portion was still filled with pus. There was a dry crust on the right side of the comb, in the place of the pustule.

*March 27th.*—The nodule in the mouth had changed to a slightly hyperæmic patch, denuded of its epithelial covering. The posterior part of the pustule on the left side of the comb was now covered with a crust. The anterior part had already begun to be detached. During the following six or eight days, the papular elevations became flattened, the crust completely detached, and the cavity filled with new tissue—in fact, the process of healing had terminated.

*Experiment XIV.*—A second small and old horse of the Hungarian breed—destined for operations—was inoculated on March 16th, by scarifying the palpebral conjunctiva of the left eye, and smearing the discharge from the fresh ulcers and mucous discharge (taken from the above-mentioned dark-chestnut horse) into the palpebral sac. Both eyes were healthy at the time of inoculation.

*March 18th.*—Slight serous discharge from left eye.

*March 20th.*—Secretion from eye increased and of a sero-mucous character. The whole of the palpebral conjunctiva was very hyperæmic and swollen.

The animal suddenly commenced to foam at the mouth, which led us to examine it; when we found the mucous membrane lining both labiæ, especially where it unites with the gums, as well as on the gums themselves, thickly studded with firm, miliary, and intensely reddened nodules. Some had already formed small pustules on their apex, covered by a loose yellowish-grey crust. The mouth was hot, and although this poor anæmic animal foamed freely from the mouth, still it did not appear ill. There was no swelling of the submaxillary glands.

Since this horse had been standing on the left side of the one used for Experiment I., and both ate out of the same crib and drank from the same pail, it is doubtful whether this disease in the mouth arose spontaneously.

*March 21st.*—The lids of the left eye partially agglutinated together. A large quantity of a muco-purulent inflammatory product collected in the palpebral sac. The conjunctiva swollen and red. No nodules or ulcers could be seen. Cornea remained transparent and clear, the lesions in the mouth were healing quickly.

During the following days the blennorrhœa subsided, the swelling and hyperæmia diminished, and on March 25th nothing abnormal could be detected in the eye, and a few days later no trace of the disease remained in the mouth.

### *Concluding Remarks.*

From the foregoing, it is evident—as we mentioned at the commencement of the paper—that the whole clinical course and symptoms of the disease exactly resembled those described by Messrs. Eggeling and Ellenberger; so that their description is completely corroborated, and consequently little remains to be said.

* I should have liked to have re-inoculated a horse with this, but I unfortunately could not get one at the time; so used a young bovine animal instead, but with negative results.

There is no doubt the disease is contagious, and may be propagated to animals of other species. For in Experiment XIV. we noticed a spontaneous infection* of the mouth, and again of the mucous membrane of the eyelid in the chestnut horse belonging to Mr. N——. This last instance is confirmed by the fact that the animal used for Experiment XIV. presented symptoms in the eye after being inoculated there. In both instances the lesions were confined to one eye only.

We might easily suppose that it was possible for the mouth to be infected from the conjunctival one, but as there were no signs of disease on the Schneiderian membrane, we do not think it was likely to be the case.

As far as our meagre experiments go, we were able to convey the disease to three horses, a cow, and a fowl, and also obtained very characteristic changes in the mouth of a sheep.

The disease in our cases was not so severe as it was in those described by Eggeling and Ellenberger; nor did we obtain any lesions on the skin, except in the first case, and then only very slightly, with no accompanying lymphatic inflammation.

With regard to the supposition of the above-named authors, that the contagium becomes weakened by passing from animal to animal, we can only say that our latter cases showed less loss of substance, *i.e.*, the ulceration was more superficial, and they healed quicker. We can also safely say that the small and large nodules on the skin of the lips had nothing whatever to do with enlargements of the hair follicles.

In the conjunctival sac we could only detect a purulent catarrh. On the other mucous membrane we once saw a small red spot precede the formation of the nodules. The latter were, as a rule, small, accuminated, level (papulous), and rapidly changed into pustules; but only partially so, viz., always at the apices.

Once we thought we had a vesicle, and that without the previous formation of a nodule, but we were not certain that the latter was not overlooked. Moreover, when its contents were microscopically examined, and its further development watched, we found it was only the commencing stage of a pustule.

Deep loss of substance (to the submucosa) was only observed in the first case The eruptions, which most resembled those of Variola, were best shown in the fowl.

Most of the nodules in the mouth were situated at the openings of the mucous follicles of the labia, but others were seen where these glands are absent (as under the tongue, anterior to the *frænum linguæ*); therefore it is palpable they have nothing to do with follicular inflammation or ulceration.

We were not able to settle the question whether it was a fixed contagium or not. From the appearance of the contents of the pustules under the microscope, we are inclined to think that the fungi (micrococci) have nothing to do with the production of the disease, for we never found them in the fluid of any case.

In the dark-chestnut horse (Experiment X.), sudden febrile symptoms, with a remarkably high temperature, accompanied the outbreak of the eruption.

Abortion in the cow cannot be said to be due to the inoculation, for the time which elapsed between the inoculation and the appearance of the fœtus was very short, and the disease was a long time before it presented any symptoms, and then they remained localised. It is more likely that the manipulation she was subjected to was the cause.

* Is it possible that the lesions in the mouth were the result of general infection as a consequence of inoculation on the mucous membranes of the eye? or are we to consider the eruptions produced by inoculation to be a purely local phenomena at the seat of inoculation and there only? I am inclined to think that it affects the whole system, although the lesions are usually, but not always, localised.—*Transl.*

## HUMAN AND ANIMAL VARIOLÆ: A STUDY IN COMPARATIVE PATHOLOGY.

BY GEORGE FLEMING, F.R.C.V.S., ARMY VETERINARY INSPECTOR.

(*Continued from p.* 39.)

I HAVE alluded to the experiments carried on in Italy from 1871 to 1874, with a view to decide the question as to the value of animal and humanised vaccine. On referring to the report,* I find the Commission was composed of a President and five members of the medical profession, one of whom was Professor Bassi, a very distinguished teacher in the Turin Royal Veterinary School, and a Secretary. Permission was given to make use of the cattle on the Royal farm at Turin; and the children in the Foundling Hospital, as well as the soldiers of the garrison, were made available in these experiments. Sixty-one cattle—chiefly cow-calves and heifers—were utilized, and the inoculations were made by puncture and incision, chiefly on the udder, seldom on the labia of the vagina. One side was, in most cases, inoculated with animal, the other with humanised lymph. This lymph was either that of natural cow-pox, artificial cow-pox (transmitted from cow to cow), humanised vaccine transferred to the cow; lymph transferred from arm to arm; or horse-pox, from a natural outbreak of the disease in horses.

It is very important to note that two experiments were made to test the transmissibility of human Syphilis to calves. At the seat of inoculation there was formation of pustules, induration of the udder and the lymphatic glands, which continued for about a month; but otherwise the animals remained in good health.

The conclusions arrived at by the Commission were as follows:—

1. The results of inoculation by puncture and incision are the same, though in the thicker skin of adult man or bovines incision is preferable; for children puncture is not so painful, and takes less time. Incision alarms the mother, as it causes a little bleeding.

2. The time of year has no marked influence on the success of vaccination or re-vaccination, though temperature will hasten or retard the appearance of the eruption.

3. The form of pustulation is in man and animals essentially the same, except that in cattle there is less lymph, and the umbilicated appearance of the pustule is not so distinct.

4. The lymph from different sources has not the same potency. In horse-pox, 72·9 per cent. of the inoculations were successful; in natural cow-pox, 72·8; and in artificial cow-pox, 44·19.

5. Humanised lymph has double the potency of that from animals.

6. Humanised lymph conveyed to cattle diminishes in activity.

7. Natural cow-pox lymph inoculated on mankind increases in potency.

8. Comparison of the primary lymph with that of re-vaccination is greatly in favour of the former.

9. *Human small-pox cannot be transmitted to cattle.*

10. The syphilis virus can be implanted in bovines, and sucessfully retransferred to man.

11. Humanised lymph possesses more tenacity of activity than any other; with properly preserved crusts or dry lymph, animals can be inoculated successfully.

12. Lymph is more easily procured from man than from animals.

13. The microscope gives no indication of the activity of lymph.

* Esperienze Comparative sul Vaccino Animale e sull'Umanizato. Relazione della Commissione, etc. Torino, 1874.

From what I have now stated, I think there are few who will continue to maintain that human Variola and Cow-pox are one and the same disease—*i.e.*, Cow-pox being merely Small-pox transferred to the cow; or that there is any relationship or resemblance between them, except in so far that they are eruptive, run a certain course, generally attack the organism only once in a lifetime, and are antagonistic to each other. It would be strange, indeed, if the virus of Small-pox could be so changed that, by being passed only once through the system of the cow, it should completely lose its identity and never regain it, no matter how long it might afterwards be cultivated in its native soil; and that, while before it could only be successfully transferred with the utmost difficulty to bovine animals, and perished in two or three removes, it should be capable, after its transmutation, of not only preserving its new characters of peculiar localised eruption and non-infectiousness, but also retain all its potency after endless transmissions through human, bovine, equine, and perhaps other animal species. "The poor unfortunate cow" is certainly not the victim of human Variola, as was asserted with more sentiment than accuracy at the conference, by a speaker who, nevertheless, confessed he had not succeeded in his attempts to produce Vaccinia from Small-pox.

Taking up this position, and supporting it by ample evidence, the knowledge we possess of virulent diseases in general, as well as the fact that the most extensive, careful, and exhaustive experiments by the ablest pathologists have failed in transmuting Variola into Vaccinia,* I may be asked how we are to account for the success of two or three persons in this direction many years ago. We may, if we choose, refer to the Lyons commissioner's experiments and explanation for a reply, and conclude that the Small-pox transferred to the cow remained Small-pox still, though it was so modified in virulency, when re-transferred to man, as to produce at first only a local eruption, though in some instances Small-pox in a mild form followed. If I mistake not, more than one instance is on record, in which medical men have imitated Ceely and Badcock, and re-inoculating children from the cow, have produced nothing but Small-pox. Among other instances of this kind, I may refer to that of Martin (*Boston Medical Journal*, 1860). That practitioner inoculated the udder of a cow with Small-pox matter, and thought he had produced Cow-pox. Collecting what he believed to be vaccine lymph from the vesicles, he vaccinated about fifty children with it, but produced only a serious outbreak of Small-pox, from which several died. And a similar, but more alarming occurrence took place in India. Even in one of Ceeley's reported successful cases of Vaccinia produced by variolation, we are informed that his assistant, in opening the supposed vaccine vesicle due

* Mr. Ceely himself affords us almost conclusive evidence as to non-identity between human Variola and Vaccinia, in the extreme difficulty, according to his own showing, with which the former could be transferred to bovines, and the remarkable facility with which the latter was propagated by the milkers. He says that in December, 1838, on a large dairy-farm where there were three milking sheds, Vaccinia first appeared in the home or lower shed. The cows in this shed being troublesome, the milker, from the upper shed, *after milking his own cows*, came to assist in this for several days, morning and evening, when in about a week some of his own cows began to exhibit the disease. It appears that, having chapped hands, he neglected washing them for three or four days at a time, and thus seemed to convey the disease from one shed to another. During the progress of the disease through this shed, one of the affected cows, which had been assailed by its fellows, was removed to the middle shed, where all the animals were perfectly well. This cow, being in an advanced stage of the disease, and of course difficult to milk, was milked first in order by the juvenile milker, for three or four days only, when, becoming unmanageable by him, its former milker was called in to attend exclusively to it. In less than a week all the animals in this shed showed symptoms of the disease, though in a much milder degree than it had appeared in the other sheds, fewer manipulations having been performed by an infected hand.

to the Small-pox virus, accidentally punctured his hand with the lancet, charged with moist lymph. On the fourth day there was a hard, deep-red, papular elevation at the seat of puncture. This was followed by constitutional disturbance—as "headache and other febrile symptoms, with roseola and fiery red papulæ on the face and other parts." On the sixth day the constitutional symptoms were more intense, and the papulæ on the face, neck, trunk, and limbs exhibited ash-coloured summits, and appeared to have slight central depressions. Some of the papulæ presented light straw-coloured summits on the seventh day, and the febrile symptoms were abated; on the eighth day, the papulæ were more yellow, and some were desiccating, but headache was still present.

But if it is admitted that it was really Cow-pox Ceely and Badcock contrived to transfer to children, might it not be suggested that in all probability the animals from which they transferred it were accidentally infected with the natural malady at the time they were inoculated with the Small-pox virus?

Cow-pox was far from rare in those days, and many might be inclined to conclude, that if the animals supposed to have developed Vaccinia from Small-pox were not inoculated with Small-pox lymph by mistake, they were already infected with Cow-pox, from which children were subsequently vaccinated. Ceely himself admits (*Transactions of the Provincial Medical and Surgical Association*, vol. viii., p. 378), that Cow-pox was prevalent in the locality when his experiments were undertaken, and he also states that in the only two instances in which he succeeded in producing Vaccinia by variolation, *the animals were also vaccinated quite close to the inoculation punctures;* while with a third heifer experimented on at the same time, *but which was not vaccinated*, there was no result.

It is somewhat extraordinary that, considering the grave issues at stake, Mr. Ceely has not been prevailed upon to undertake further experiments, and to repeat that success which could not be achieved by any subsequent experimenters, though they had the advantage of far more abundant means and facilities. Surely if, as has been asserted, Cow-pox could be so easily produced accidentally, by contact with Small-pox-infected people at the commencement of this century (though there is no proof of this), it should be as readily developed now, experimentally or accidentally; and especially when we find that vaccination—which some authorities say is only variolation—is easily and certainly practised in the bovine species. According to his own statement, Mr. Ceely only succeeded twice, under the conditions mentioned above, in producing Vaccinia from Small-pox, though his experiments appear to have been numerous. All subsequent attempts of most careful, skilled, and patient investigators have failed.

But if the views I entertain are well-founded—and reasoning and facts are altogether in their favour—Vaccinia cannot be developed from human Variola; the two are distinct and special infections—as distinct as two individuals of the same species. Vaccinia is as much a disease of the bovine species as Small-pox is a malady peculiar to man—each is a special form of Variola, and each exists and prevails not only independently, but marked with all its own particular characteristics and attributes. Both attack males and females, in direct proportion as these are exposed to contagion.

The symptoms of Small-pox in mankind are well known. Not those of Vaccinia, however, though Ceely has described what he designates the "natural disease" very clearly.* If we study the symptomatology in a large

* It must be remembered that at that time very little was known of animal diseases, or of the history of those wide-spreading destructive epizoöties which have only been carefully studied within the last few years. We need not be surprised, therefore, to find grave mistakes committed with regard to bovine diseases, up to quite recent times,

number of cases artifically produced by inoculation with humanised vaccine lymph—no matter in what region of the ox the virus has been deposited, we shall find a remarkable constancy and regularity.

After the second or third day there is seen in a white-skinned animal at the seat of puncture, a small red papule which, on the third or fourth day, is somewhat large and prominent, rather pale, surrounded by a bright-red areola, and slightly depressed in the centre. From the fourth to the fifth day, the papule, now a vesicle, has a well-defined umbilicus, a marked areola, and an elevated margin. These characters are all the more developed towards the eighth or ninth day, when they begin to subside; the pustule becomes brownish-coloured in the centre, and yellowish or nacrous towards the margin. Dessication has begun; the brown tint gradually invades the entire surface; the areola disappears; the prominence of the pustule is diminished; and towards the twelfth or fourteenth day nothing usually remains except the crust, which falls about the fifteenth to the twentieth day, leaving only a slight, but permanent cicatrix.

The same changes occur in a dark skin, but they cannot all be so readily perceived, in consequence of the pigmentation.

The size and prominence of the pustules may, of course, vary, and their base appear more inflamed in some cases than others, according to constitution, condition of the animal, and other circumstances: the evolution being generally most notable in those which are in good health. The virus seems to be most active towards the sixth or seventh day after inoculation, and then rapidly loses its potency. Indeed, it has been found that though there is then not so much lymph as afterwards, between the third and seventh days is the period when it is most potent.

As a rule, there is little or no general disturbance of health perceptible; and though in the natural disease a more or less generalised eruption has been observed in rare instances, yet it has not been noticed in the artifically induced malady; while it has not been at all unusual to discover a kind of secondary eruption, of exactly the same character, around the inoculation points—an eruption which might be due to accidental inoculation when the operation was performed. In the experiments of the Lyons Commission, a young bull, successfully inoculated in three places on the scrotum, on the sixth day had a newly-developed pustule behind one of the places. This had all the characters of the others, and though its presence was attributed to auto-inoculation, yet there was no certainty that it was so produced.

The natural Cow-pox I have described in my work on "Veterinary Sanitary Science and Police" (vol. ii., p. 91). The symptoms and course of the disease may be briefly described as follows:—After slight febrile disturbance, partial loss of appetite and suspension of rumination, trifling constipation and diminution of the urinary secretion—symptoms which may, nevertheless, be absent or unperceived—and lessened quantity, as well as altered quality of the milk (more aqueous and disposed to coagulate than usual), the udder is observed to be swollen, particularly near the teats, and is painful during milking. In two or three days there are seen on the udder, and chiefly on the teats, small hard tumours, varying in size from that of a pea to a haricot-bean, and of a pale-red hue. Increasing in volume, a viscid yellow fluid

nor need we wonder at Mr. Ceely speaking of malignant vaccine, and even Variola appearing in cattle. In the same volume in which his observations appear, is a report on vaccination, drawn up by a medical committee; and the superstructure of the report is based upon the supposition that the Cattle-plague which had repeatedly visited this country, raged on the Continent, and was seen in India, was only Variola —*variolæ vaccinæ*—which, transferred to mankind, conferred immunity from Small-pox! The same blunder was made in 1865 when Cattle-plague was destroying our herds, and vaccination was resorted to, to stay its ravages.

appears beneath the epidermis. At first this fluid is in the centre, but it soon extends towards the circumference, giving the nodosities or papules a light-blue tint in the middle, but a reddish-blue or yellow colour towards the periphery. At this period the centre is also usually umbilicated or depressed; the margin is hard, tumefied, and painful; and when the skin is thin and transparent, a red areola is noticed. These "pocks" gradually increase in dimensions, and towards the eighth or tenth day have acquired their maximum development. On the udder they are generally circular; on the teats they are oblong. The contents then become purulent in character, and a crust begins to form in the centre, gradually extending to the circumference. This crust is thick, shining, and deep-brown or black in colour; it is firmly fixed to the skin, from which it does not become detached until the tenth to the fifteenth day, unless accidentally removed. When it has fallen off, it leaves a cicatrix, which persists for a considerable time, and is at first bluish-red in colour, but gradually becomes pale. On the udder the cicatrix is depressed in the centre.

In the same animal there may be successive crops of papules and pustules; they may not all be developed simultaneously, some being crusted, while others are only nodes. The later eruptions may, however, be due to re-inoculation during milking; this is favoured by the existence of sores or fissures on the teats. In consequence of this circumstance, the malady may not pass through all its phases within a less period than a month or six weeks. The lymph taken towards the eighth or tenth day is most active for vaccination purposes.

The variable colour of the vaccinal pustules is not an essential characteristic of the disease, and does not therefore indicate the real nature of the eruption. If the skin is fine and white, the variolæ have a silvery-white, bluish-white, or slatey-hue; if it is thin but dark-coloured, they are leaden-grey; if the hair is of a bright shade, they have a colour varying from a bright-red to a pale or blood-red tint, but always wear a metallic lustre. On a thick, white, and wrinkled skin they have a dull opaline lustre.

In exceptional cases there is somewhat severe constitutional disturbance before the eruption appears. For instance, in the Wurtemberg Veterinary Reports for 1877, mention is made of a cow which showed a rather high degree of fever: hot skin, quickened respiration, horripilation, and rigors from time to time. On the four teats appeared more than a score of pocks; these contained a very small quantity of thick lymph, some of which was preserved in capillary tubes, and another portion removed by means of a fine hair-pencil and kept in glycerine. These portions were successfully employed in vaccination. The owner of the cow was accidentally inoculated through milking the animal, a large pock forming on his hand.

In studying Cow-pox, it must not be forgotten that there is a spurious Vaccinia, sometimes designated *Vaccinella* or *Vaccinoïdes*, a disease, or several forms of disease resembling Cow-pox to some extent, but yet differing from it in several important features. It is generally observed soon after calving, and would seem to be contagious, as it attacks nearly all the cattle in a shed when one cow becomes affected. It appears to be very uncertain in its transmission to mankind, and to be also more or less enzoötic. The symptoms are much like those of Cow-pox, the only important differences being in the character of the exanthem, and the lesser degree of virulency of the infecting agent. The eruptions of spurious Vaccinia are divided into three groups. One consists of acuminated papules or pustules, which may or may not be developed at the same time as the true pock; they appear as small red nodes about the size of a grain of millet, destitute of areola and umbilicus, and soon changing into a conical pustule, the contents of which quickly desiccate, and form a crust—the whole process only occupying from four to

six days. The eruption may appear several times, however, so that the entire period will extend over a number of weeks. The second group is composed of hard indolent tumours, the so-called *Steinpocken* of the German veterinarians; they vary in size from that of a pea to that of a nut, are somewhat red at first, and have no areola; or they may appear as a kind of warty excrescences on the skin of the udder. They frequently remain unaltered for weeks, or even months, and at last disappear very slowly. Emphysematous and watery vesicles constitute the third group. They first appear on the udder in the form of red spots, which are rapidly transformed into vesicles ranging in size from a pea to a cherry, but destitute of areola and umbilicus. They contain a serous or purulent fluid, are readily broken, and are covered by very thin crusts, which soon fall off. Frequently their contents are quickly absorbed, leaving only an empty epidermic envelope, which constitutes the emphysematous pock. They pass through all their phases within five or six days.

Such is Cow-pox, as we know it at the present day; and its course is exactly that of human vaccination with Jennerian vaccine, which is in reality nothing more or less than the Cow-pox transmitted through very many successive generations of mankind. The vesicle of Vaccinia has been simply transferred from the cow's udder or teat to the human arm—there is nothing whatever of Small-pox in it.

(*To be continued.*)

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## ON LAPAROTOMY AND THE PRINCIPAL OPERATIONS SUBSEQUENTLY PRACTISED ON THE ABDOMINAL ORGANS OF THE DOMESTIC ANIMALS.

(*Continued from page* 133.)

### 2.—Laparotomy Considered in a Special Manner.

In this second portion of my work I propose to study, in a succinct manner, the principal operations in which Laparotomy may be resorted to. These are as follows:—

I. *Direct reduction of internal strangulated hernia;*
II. *The operation for intestinal invagination;*
III. *Reposition of the uterus in cases of torsion* irreducible by ordinary means *(uterine detorsion);*
IV. *The Cæsarean operation (Laparo-hysterotomy);*
V. *The extraction of foreign bodies lodged in the intestines (Laparo-enterotomy).*

To these different operations might be added, *ablation of the ovaries (Laparo-ovariotomy)*, and the extraction of foreign bodies from the stomach *(Laparo-gastrotomy)*. But the ablation of the ovaries by the flank *(castration)* is only practised upon the females of small species of animals, and according to a procedure too well-known to require describing here. It has been mentioned that *castration by the flank* of the cow and cryptorchid horse has yielded very satisfactory results; and it may be added that the operation *per vaginam* in the first-named animal is still more efficacious, and consequently it is generally preferred now-a-days. With regard to *Laparo-gastrotomy*, it is seldom resorted to except with bovine animals, and I have nothing to add to the descriptions of it which are to be found in classical works on veterinary surgery.

### I.—*Direct Reduction of Internal Strangulated Hernia.*

1. HISTORY AND INDICATIONS.—Up to the present time, the direct operation for internal strangulated hernia appears to have been practised only on the ox tribe. It is known that the ox, and notably that of the mountains, is particularly liable to an altogether special kind of hernia, designated *pelvic* because of its situation. It is characterised by the passage of a portion of the small intestine through an accidental opening in the peritoneal duplicature enveloping the spermatic cord, and particularly the *vas deferens*. The existence of this condition is easily determined by rectal exploration.

So long ago as 1810 Oesterle had recommended opening the flank in order to reduce pelvic hernia, when it was found that it could not be done by rectal *taxis*. Since that time it has been practised a certain number of times, and always with success, according to Anker, Strauss, Vine, and Hering. How is it, then, that it now appears, from Zundel's report, to be completely abandoned? That the cases in which this operation might be resorted to are exceptional and somewhat rare, I am ready to believe; but when once a hernia is recognised to be irreducible by ordinary means, I cannot see any possible reason for hesitation in practising it without delay.

2. OPERATION.—The operation for strangulated pelvic hernia comprises three principal steps: *incision of the flank*, *reduction of the hernia*, and *abdominal suture*.

(*a*) The *flank incision* is made on the right side, and should be sufficiently extensive to admit the hand easily.

(*b*) *Reductien of the hernia* usually demands enlargement of the hernial ring, and this may be achieved with the hand only or by means of the bistoury *caché*. If the dilatation of the ring cannot be effected by the fingers, the cord should be cut by the knife.

(*c*) There is nothing to be added to what I have already said with regard to the *abdominal suture*, and to the results and subsequent management of the operation.

If the direct operation for internal hernia has yielded good results in the ox, this should be an encouragement to attempt the same operation on the horse, when it is ascertained that he is suffering from obstruction of the intestinal canal produced by strangulation. I am aware that it is not easy to diagnose precisely the existence of internal strangulation in the equine species; but there can be no doubt that in certain cases this diagnosis may be fixed with sufficient certainty to justify recourse to Laparotomy as a last resource, and when every other means of relief is deemed inefficacious.

Among the internal strangulations in the horse, I may mention *diaphragmatic hernia*, *mesenteric hernia* (laceration of the mesentery), *pancreatic hernia* (hiatus of Winslow), *omental hernia* (laceration of the great omentum), and strangulation of the intestine around a pediculated tumour of the peritoneum.

### II.—*Direct Operation for Intestinal Invagination.*

1. HISTORY AND INDICATIONS.—For intestinal invagination, as for internal hernia, the direct operation has scarcely been attempted on any animal except the ox. In the meanwhile, I know of three instances in which success was obtained by Meyer, Luscan, and myself; and these were of such a kind as to induce the most timid practitioner to undertake the operation in every case in which the indication for its employment is clearly marked.

This indication is again deduced from the diagnosis of the affection, as well as the impotency of other means of treatment.

The principal diagnostic characteristics of intestinal invagination are: the remittent colicky pains of average intensity; more or less prompt constipation; alternative diarrhœa and constipation; mucus or muco-sanguino-

lent dejections; the presence of a special tumour appreciable through the abdominal parietes in small animals, or by the rectum in large. This tumour —known as that of *invagination*—is usually elongated, cylindrical, somewhat dense, depressible, elastic, more or less moveable, and capable of changing its consistency according to the appearance or disappearance of a *processus of erection* peculiar to it.

This tumour, when found in an animal affected with Colic, should leave no doubt as to its nature, as it can scarcely be anything else than the result of an invagination of the intestine.

I should, however, remark that there are three forms of intestinal invagination in which the characters of the tumour are somewhat different from those just noticed. The first consists in the passage of a portion of the small intestine into the cavity of the cæcum *(ileo-cæcal invagination)*. The second is characterised by the penetration, total or partial, of the cæcum into the large colon *(cæco-colic invagination)*. In the third, the invaginated portion partly passes through the oval opening *(rectal invagination)*. Nothing can be more easy than the diagnosis of the latter form of invagination; but the existence of the other two can only be determined by direct palpation of the intestinal mass.

2. OPERATION.—The operation for invagination usually comprises four principal steps: the *flank incision, prehension and mutation of the tumour of invagination, dis-invagination*, and *abdominal suture.*

(*a*) *Incision of the flank.*—The situation of the invaginated mass in ruminants necessitates the opening being made on the right side. In the horse, most frequently the abdomen is opened at the left flank (jejunum and small colon), very rarely at the right flank (cæcum and ileum); in the pig, dog, cat, and rabbit, the right or left sides may be opened indifferently.

(*b*) *Prehension and mutation of the tumour of invagination.*—This stage of the operation is peculiar to the most frequent form of intussusception —that of the jejunum and floating colon. After opening the flank, the fingers or entire hand are introduced into the abdominal cavity in search of the *tumour of invagination*, which is recognised by the previously-described characters. When found, it is brought outside the flank opening, and laid on a cloth previously dipped in tepid water or milk.

(*c*) *Dis-invagination.*—Nothing appears to be more easy, at first sight, than the reduction of an intestinal intussusception which is in our hands, and which we can manipulate as we please. And this is the fact when we have to do with a recent case, and there are as yet no adhesions between the misplaced parts; but it is not so should the invagination have been in existence for some days. Then inflammation has had time to develop itself, exudation has taken place, adhesion between the serous surfaces in contact has occurred, and consequently the operation has become much more difficult and delicate, and demands the greatest precautions if rupture of the intestinal wall is to be avoided. The following is the procedure I adopted in the case of a cow, the details of which I have elsewhere published:—

I at first attempted reduction by exercising gentle traction on the two ends of the invaginated canal, but this did not answer. I then tried the combined action of slight traction on the invaginated portion and external pressure on the prominence formed within the sheath by the *intussusceptum* or included part; but this was no more successful than the other attempt. It was therefore presumed that extensive abnormal adhesions existed between the serous layers of the middle and internal cylinders, and that these adhesions, in addition to the strangulation produced by the engorgement of the parts, were the cause of the difficulties encountered in attempting reduction.

To overcome this double obstacle, it appeared to me indispensable to proceed to knead the parts (*massage de la parte*) : and with this object, pressure and rubbing were exercised in every direction, the hands having been previously plunged in tepid milk. After a few minutes of this manipulation, having broken up the few adhesions which it was possible to reach by introducing the finger between the opposing surfaces of the middle and internal cylinders (the handle of a table-fork or spoon might have answered equally well), I made a third attempt at reduction by *traction* and external *pressure*. This was crowned with complete success, for the three tubes became disengaged with the greatest facility. Before returning the intestine, care was taken to remove the exudate and other foreign matters soiling its surface.

It will be understood that the operative procedure ought to be quite different when rectal, ileo-cæcal, or cæco-colic invagination has to be dealt with. In these cases reduction must be effected within the abdominal cavity, but the manner of doing so is too simple to need further notice.

If reduction cannot possibly be effected, or if the intestine is divided or gangrenous, it will be necessary to have recourse to excision of a portion or the whole of the invaginated mass, and unite the two extremities. This operation has proved perfectly successful in Meyer's case, already alluded to. It requires the torsion of four arteries and ligation of twelve others ; and to obtain the intestinal anastomosis, the operator "introduced into the intestine a piece of paper rolled up and greased ; the margin of the posterior part was doubled inwards for about an inch, and the anterior part was then passed into it for about an inch and a half, so that the serous covering of the two portions was in contact. Both portions were then united through by the continuous suture, made by means of a very fine curved needle and a well-waxed double thread. The stitches were one to two lines apart, and the serous and muscular layers were alone included in the suture. The ends of the thread were well secured, and the intestine carefully cleansed and returned into the abdominal cavity."

(*d*) *Abdominal Suture.*—This is the same as for internal hernia.

3. CONSECUTIVE CARE.—In addition to the care to be given to the wound, the preventive or curative treatment to be adopted for Enteritis or Peritonitis must be observed.

### III.—*Detorsion of the Uterus.*

1. HISTORY AND INDICATIONS.—This operation is scarcely resorted to except for cattle. It was practised successfully by Epple in 1864, Diccas in 1868, Heichlinger in 1870, and Santichi and Obig in the same year. It is naturally indicated when replacement of the organ cannot be effected by rolling the animal, or by the ordinary surgical manœuvres *per vaginam*.

2. OPERATION.—This is also divided into three principal parts : *incision of the flank*, *uterine detorsion*, and *abdominal suture*.

(*a*) The *flank incision* should be made on the right side, and it ought to be of sufficient extent to allow the hand and arm to pass easily through.

(*b*) The *uterine detorsion* is effected by placing the hand above or below the organ, according to the direction in which it is twisted. It is then seized, and brought into its normal position by raising and turning it. In order to prevent the hand slipping, Diccas recommends enveloping the hand in a piece of thin cloth. When the weight of the fœtus is very considerable, Obig proposes to pass a cord with a running noose around the uterus, to assist in raising it and giving it the necessary displacement.

(*c*) *Abdominal Suture.*—This may be practised before or after the extraction of the fœtus. When it is performed subsequently, an assistant should keep the wound closed until delivery is effected.

### IV.—*Laparo-Hysterotomy.*

1. HISTORY AND INDICATIONS.—Bourgelat appears to have been the first to counsel this operation, but it does not seem that either he or Brugnone, who also advised it in 1781, had attempted it on the living animal. It was Morange, in 1813, and Gohier, in 1816, who really ventured upon performing it. Since then Laparo-hysterotomy has been practised with varying success by a number of veterinary surgeons, among them Charlot, Chretien (1824), Pradol (1832), Lecoq, of Bayeux (1833), Garreau (1845), Morgan (1858), and Rohlwes and Hayer.* In twenty-eight observations which he has collected, Saint-Cyr finds eight successful ones. In two instances the mother survived but the fœtus succumbed; in other six the mother lived, but there is no mention of the offspring. To these results I add those I have myself obtained. In six operations on the bitch, three were successful, and in one instance I succeeded in saving the mother and three puppies (1866).

With such facts before us, there is reason to admit that Laparo-hysterotomy would succeed more frequently if, in those cases in which it is indicated, it was resorted to in time and practised on subjects whose organs had not been already seriously injured. The practitioner should hasten to perform it whenever he discovers that birth cannot take place by the natural passage.

2. OPERATION.—The Cæsarean operation resolves itself into five principal acts: *incision of the flank, prehension and mutation of the uterus, incision of the uterus and fœtal envelopes, extraction of the fœtus and its envelopes, and abdominal suture.*

(*a*) *Incision of the Flank.*—It is known that in female quadrupeds the intestinal mass rests chiefly on the floor of the abdomen; and it is by reason of this condition that the flank incision is absolutely preferable to the incision at the *linea alba*, in order to penetrate the abdominal cavity and reach one or other of the viscera contained therein. Performing the Cæsarean operation by division of the *linea alba* has always had a fatal result.

In ruminants the incision should be made in the right flank; but in the other species the abdomen is usually opened at the side where the uterus is most prominent. The opening must be sufficiently extensive to allow the passage of the uterine cornu containing a fœtus.

(*b*) *Prehension and Mutation of the Uterus.*—Instead of simply bringing the uterus against the abdominal opening, as the majority of writers recommend, I believe that it is preferable to carry it completely through this opening. In this way we pull out the greater portion of one of the cornua. The uterine incision and extraction of the fœtus may then be made with facility, and without allowing the escape of any fluid into the peritoneal cavity; for this escape, which is usually the cause of the gravest complications, ought to be difficult to prevent when we are content to follow the counsel of M. Saint-Cyr, and "compress by the hands the abdominal walls on each side of the incision, in order to maintain the latter in contact with the uterine parietes."

To bring the uterine cornu outside, its free extremity is at once carried to the opening, and then direct traction, combined with pressure on the abdomen, is amply sufficient to cause its protrusion to the necessary extent.

(*c*) *Incision of the Uterus.*—When the uterus contains several fœtuses, a single incision usually suffices for the extraction of all. But several incisions are necessary when the fœtuses are not sufficiently developed to give proper amplification to the organ in the parts remaining vacant. Consequently, there must be as many incisions as there are fœtuses to remove.

The uterine incision should be made longitudinally on the upper face of

* A large number of illustrative cases will be found in our "Veterinary Obstetrics," p. 550.—ED. *V. J.*

the organ, at a small distance from the broad ligament, and at a point where the blood-vessels are not large. In this way considerable hæmorrhage is averted, and the escape of the uterine contents into the peritoneal cavity is prevented. The incision may be made in such a way as not to touch the fœtal envelopes, although this precaution, in my opinion, is not of real importance with regard to the result of the operation.

(*d*) *Extraction of the Fœtus and its Envelopes.*—This part of the operation is of the simplest kind. On the removal of the fœtus care should be taken to remove its envelopes, and then the wound and the uterine cavity are scrupulously sponged out. When the parts are in a healthy condition, we may dispense with sutures in the visceral wound, as this will soon be closed by the natural retraction of the organ. Sutures may, however, be advantageous in the cases in which the uterus is perceptibly altered by the prolonged retention in its cavity of a dead and more or less decomposed fœtus. In these instances, retraction takes place much too slowly to prevent the escape of fluid from the uterus, and this is all the more serious as its secretions are always more or less altered.

(*e*) *Abdominal Suture.*—This is as in ordinary Laparotomy.

3. CONSECUTIVE TREATMENT.—The subsequent treatment has principally for its object the prevention or cure of Metro-peritonitis.

### V.—*Laparo-Enterotomy.*

1. HISTORY AND INDICATIONS.—Laparo-enterotomy is especially practised with a view to the extraction of foreign bodies which commonly obstruct the intestinal canal. Calculi and stercoraceous pellets, as is well-known, are not rare in the horse. In the dog the intestine is most frequently obstructed by the most diverse foreign substances, such as corks, scraps of bones, pebbles, etc. Some years ago I reported the case of a dog which died from swallowing a humming-top, which had become fixed towards the middle of the small intestines. Last year the bodies of two dogs were brought to the clinic of the veterinary school, and the autopsy revealed the presence of an ordinary-sized cork in the same portion of intestine. The latter was quite empty and markedly retracted behind the foreign substance, though dilated and more or less filled with fluid matters in its anterior portion.

In the presence of these lesions, I asked myself how it was that foreign bodies of so relatively small size could become fixed in the middle of a canal, the extensibility and contractility of which, one would infer, must be an obstacle to such an accident. It might be supposed that the nature of the obstructing body should be considered, and we may admit that the cork, gliding with more or less difficulty over the mucous surface, should soon cause fatigue and a kind of paralysis of the muscular layer, leading to arrest of the substance at a more or less great distance from the pylorus, according to the relative volume of the cork and the energy of the occupied organ.

It appears that the occurrence above alluded to is not rare. Felizet, senr., of Elbœuf, reports four cases of dogs constipated by corks: two of these animals, left to themselves, died; the other two were operated upon, and perfectly recovered.

Laparo-enterotomy, as I have already said, has been successfully practised on a horse and two dogs by Felizet, senr. According to our researches, that practitioner is the only one up to this time who has attempted the extraction, by Laparotomy, of foreign bodies arrested in the intestinal tube. His first attempts were so favourable that he should soon have numerous imitators.

The principal, and often a difficult question, is to determine the presence of a foreign body in the intestine. Felizet succeeded in doing so by rectal exploration in the horse, and abdominal *taxis* in the dog.

In adding to the information afforded by these two modes of exploration and the ordinary signs of intestinal obstruction, it remains to determine, in a more or less precise manner, if there is occasion for surgical extraction. This will be absolutely necessary when it is determined that the foreign body is too large to pass through the different parts of the intestinal canal.

2. OPERATION.—Laparo-enterotomy comprises four principal periods: *incision of the flank*, *incision of the intestine*, *intestinal suture*, and *abdominal suture.*

(*a*) *Flank incision.*—This may be practised either on the right or left side, according to the situation of the foreign body. Its dimensions will, of course, be in relation to the volume of the body to be extracted.

(*b*) *Intestinal incision.*—To make this incision, the intestinal portion containing the calculus should be brought outside the external wound; and to effect this, Felizet keeps one hand in the latter to prevent the intestines escaping, while he introduces the other into the rectum in order to seize and carry the foreign body towards the parietal opening. The calculus extracted by him occupied the floating portion of the colon, and was about the size of a child's head. It was removed by a longitudinal incision made about two fingers' breadth from the insertion of the mesentery.

(*c*) *Intestinal Suture.*—Felizet obtains union of the intestinal wound by means of the continuous suture. If this suture, notwithstanding the inconvenience it possesses, could bring about the cicatrisation of an extensive intestinal wound, with more reason might me hope to obtain the same result by employing the more rational and better combined sutures described by Drs. Gely and Lambert, and mentioned in all classical treatises on surgery.

(*d*) *Abdominal Suture.*—This does not offer anything particular.

3. CONSECUTIVE TREATMENT.—This should be directed to the prevention of Enteritis and Peritonitis.

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## CENTENARY OF THE DRESDEN VETERINARY SCHOOL.

THE centenary of the foundation of the Dresden Veterinary School will be commemorated on October 7th, by a series of festivities, which will be opened by a speech from the Saxon Minister of the Interior, Von Nostitz-Wallwitz, followed by a historical address by Professor Dr. Leisering, of the Veterinary School; after which the day will be spent in receiving congratulations and deputations, visiting the school, holding a banquet, and a students' conversazione in the evening. The next day is to be devoted to excursions in the neighbourhood of Dresden.

Invitations have been issued to the most distinguished veterinarians to be present, and there can be little doubt that the centenary will be celebrated in a manner befitting the high reputation of the school and the great services it has rendered since its institution in 1780.

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## THE FELLOWSHIP DEGREE.

AT a meeting of the Examination Committee for the Fellowship Degree of the Royal College of Veterinary Surgeons, on August 11th, the following gentlemen, having successfully undergone the necessary tests, were elected Fellows:—

Mr. J. Ferris, Royal Artillery, Woolwich.
„ C. P. Lyman, United States of America.
„ A. Broad, London.
„ J. W. T. Moore, Inspector of the Privy Council, Liverpool.

The following were the written questions :—

*Dietetics.*

1. Name the nitrogenous and non-nitrogenous elements of food.
2. State the relative dietetic value of oats, beans, and bran.

*Surgery.*

1. Give the pathology and treatment of "Canker" in the horse's foot.
2. Give the pathology of "Seedy Toe" and the best mode of treatment.

*Pathology.*

1. Describe the pathological anatomy of Swine Plague.
2. Mention some of the more recent discoveries in the pathology of Anthrax.

*Epizoötiology.*

1. Give a brief historical sketch of the first appearance of Canine Distemper in Europe.
2. Mention the circumstances which lead to the diffusion or spread of contagious Pleuro-Pneumonia in a country recently invaded by it.

*Physiology.*

1. Describe the composition and uses of the different fluids secreted in the digestive organs.
2. Describe the origin and function of the fifth pair of nerves.

*Anatomy.*

1. Describe the differential arrangement in the pleural and peritoneal membranes.
2. Give an outline of the respiratory apparatus in birds.

*Therapeutics.*

1. Describe the preparation and physiological action of chloral.
2. What are the physiological and therapeutical actions of belladonna opium, and digitalis.

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## DEATH OF A VETERINARY SURGEON FROM HYDROPHOBIA.

THE list of members of the veterinary profession who have perished from Hydrophobia is now somewhat large, and the latest addition is that of M. Pierre Bourrel, a veterinary surgeon in Paris, who died on July 31st. He was bitten three months previously by a sick dog to which he was attending. He neglected, however, to cauterise the wound till an hour afterwards. M. Bourrel was uncle to J. Bourrel, an authority on Canine Rabies, who proposed, as a precautionary measure, blunting the fangs of dogs by filing the teeth, as is described in "Rabies and Hydrophobia."

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## THE BRITISH MEDICAL ASSOCIATION.

AT the annual meeting of the British Medical Association held at Cambrid ge in August, on Friday the 13th, in the Section devoted to Sanitary Science, Mr. Fleming, Army Inspecting Veterinary Surgeon, read a paper on the Influence of Bovine Tuberculosis on the Public Health. We hope to publish this paper when opportunity offers.

# Proceedings of Veterinary Medical Societies, etc.

## ROYAL COLLEGE OF VETERINARY SURGEONS.

### Quarterly Meeting of Council, held 29th July, 1880.

Present—The President (in the chair), Sir F. Fitzwygram, Professors Pritchard and Walley, Messrs. Blakeway, Cartwright, Coates, Collins, Dollar, Dray, Dun, Greaves, Harpley, Taylor, Whittle, Woods, and the Secretary.

The Secretary read the notice convening the meeting.

The minutes of last meeting were read and confirmed.

The President called attention to the position which the Royal College held with the Conference that had lately been held at Brussels. The Brussels veterinary surgeons determined this year to have an International Conference, and had sent invitations to all the veterinary schools in Europe, America, and elsewhere, but he found that the Royal College of Veterinary Surgeons was not known on the Continent, and was not in any way recognised. An invitation was sent to him individually to attend the Conference, and he attended and was well received by the members. There were representatives from Germany, Holland, France, and Belgium. The reception given to him by the Belgians was most cordial. They did not know of the existence of the Royal College of Veterinary Surgeons, and apologised for not having that knowledge, thinking that their ignorance on the matter might be taken as a slight. He wished to draw attention to this, because, although present at the Conference, he had no official status. He thought the time had come when they should elect some of their professional brethren on the Continent as Honorary Fellows of the Royal College.

Signatures were affixed to diplomas in favour of Mr. James Shivas, Frith View, Invergordon, and Mr. E. J. A. C. Yorston, of Manchester.

The Secretary announced that letters had been received from Professor Williams, and Messrs. Robertson, Reynolds, Anderton, Freeman, Cox, and Morgan, regretting their inability to attend the meeting. Mr. Robertson stated that, owing to his accepting the appointment of Teacher at the Royal Veterinary College in London, it would be incumbent on him to resign his position as Examiner. In doing so, he begged to convey to the Council his sincere thanks for the honour conferred upon him, and for the uniform courtesy he had received during the period he had acted in his official capacity.

It was proposed that a vote of thanks be tendered to Mr. Robertson, for the manner in which he had carried out his duties as Examiner.

The President pointed out that it would be necessary to appoint a successor to Mr. Robertson at the next meeting of Council.

#### *Fellowship Degree Examination.*

The President said that at the last meeting of the Council there were three candidates for this examination. Since that time there were three additional names. One gentleman would leave for America in the middle of August, and he was anxious to undergo the examination before that period. He therefore thought it would suit if the 12th of August were fixed for the examination.

The Secretary read the correspondence, and was instructed to reply to the several letters.

#### *Report of Examinations.*

At a meeting of the Court of Examiners, held in London on the 6th of July, 1880, for the Pass Examination, seven candidates passed, and three were rejected. At a meeting held in Edinburgh on the 22nd July, three

passed from the Edinburgh Veterinary College, and from the New Veterinary College eight passed and one was rejected.

At a meeting for the Second Examination, held in London on July 7th, 1880, eight passed.

At a meeting for the First Examination, held on July 8th, 9th, and 10th, twenty-two passed, and seven were rejected.

At a meeting of the Scotch Section of the Court of Examiners, held on July 23rd and 24th, for the Second Examination, seven passed from the Edinburgh Veterinary College; two passed and one was rejected from the New Veterinary College; and three passed and two were rejected from the Glasgow Veterinary College.

The report of the Museum Committee was read, and it was recommended that the sum of £37 10s. should be expended on glass cases for the preservation of the various specimens.

The report was received and adopted.

The Obituary Notice was read.

The Registration Committee Report, containing several suggestions, was received and adopted.

It was pointed out by some of the Council, that if any mistakes were observable in the Register it was the duty of those who noticed them to point them out to the Registrar. In the course of the various observations offered, Mr. GREAVES spoke highly of the painstaking care of the Secretary and Registrar in compiling the Register.

The PRESIDENT pointed out that the Register was largely at the mercy of the members of the profession themselves for corrections.

Ultimately it was resolved that proofs of the list of members be sent out to each member of Council, and that ten days be allowed to return them.

*Finance Committee.*

The vouchers and receipts for payments during the preceding quarter were examined and found correct. The present liabilities amounted to £141 11s. 4d., which the Committee recommended should be discharged. There was a balance left at the banker's of £918 10s.

The PRESIDENT called attention to the item paid for police attendance in Edinburgh during the examination of students, and expressed his regret at such a state of affairs. The public, seeing policemen stationed in the hall, would not make very complimentary remarks, and he hoped the professors would use their best endeavours to instil notions of order. He also alluded to the untidy condition in which some of them appeared as candidates for admission to a profession which ought to be held in high esteem by them. He was convinced that the principals of the schools in Edinburgh had the welfare of the profession at heart, and that they would see the necessity for his making these remarks. He apologised for bringing the matter before the Council, but it was, he thought, quite time that steps were taken to remedy the evil.

Professor WALLEY said that all the professors in Scotland were equally annoyed at policemen having to be in attendance at these examinations, and nobody could impress upon the students more than he himself did the necessity of appearing before the Examiners as gentlemen in every sense of the word. He suggested that if the students were allowed to wait in a room, as in London, and not kept idling about, such disturbances would not occur at all.

The PRESIDENT said that two years ago the damage done to the walls of the Masonic Hall was so great, and the students were so ill-behaved, that the authorities gave notice that the hall would not be granted in future unless there were policemen to guard the students.

Professor WALLEY said that the subject was one which had occupied his attention for some time, but he thought that a notice ought to have been given to the principals of the schools before the matter was mentioned at the Council

On the motion of Mr. PRITCHARD, seconded by Professor WALLEY, the Finance Report was received.

Cheques were ordered to be drawn for current expenses.

Professor WALLEY moved that the Report be adopted, and that the Treasurer be instructed to invest £500.

Mr. BLAKEWAY seconded the motion, which was carried.

*House Committee.*

The Report was taken as read.

On the motion of Mr. DRAY, seconded by Mr. PRITCHARD, the Secretary was empowered to purchase a safe in which to deposit the documents of the Council, at a sum not exceeding £20.

Major-General Sir F. FITZWYGRAM moved that a second Examiner be appointed in each subject in the Pass Examination. In doing so, he referred to the present satisfactory state of the funds. It would be in their recollection that four or five years ago the College was gradually drifting into insolvency, and they were obliged to take some stringent steps in regard to their fees. It was then conceded for the time, though it was considerably objected to then, that some portion of the two earlier examinations should be carried on by single Examiners, and that in the Pass Examination, in which hitherto there had been two Examiners, there should be only one Examiner. That system had gone on up to the present time, but it was one which was open to objection, and he was one of those who were responsible for moving that the old custom of the College should be reverted to as soon as the funds would admit of it. He was quite aware that this subject had become complicated in consequence of another subject having one Examiner, but he would ask the Council that night, especially as Professor Williams was not present, to agree simply on the broad grounds of the question, if the funds would allow it, to have two Examiners in each examination. He wished to disconnect his proposal from anything that might have occurred outside.

Mr. DRAY seconded the motion.

Mr. HARPLEY suggested that the motion should include the proposal that an Examiner should be appointed at the next quarterly meeting.

The PRESIDENT said he had not urged the necessity of appointing a second Examiner at his table, and that he was willing to perform the duties as heretofore, single-handed. He could not, therefore, see the necessity for having a helpmate. He should prefer to remain single-handed until the Examiners in the First and Second Examinations should sit double.

Mr. DOLLAR said that in his opinion the Pass Examination was of much greater importance to the Examiners, to individuals, and to the profession than the First and Second Examinations. Speaking as an Examiner of twenty years' experience, he thought it was of the greatest importance to the Examiner himself and the individual examined that there should be some one to assist him. There was no one except those who had sat eight hours examining students right off with no one to assist them, who knew what a trying matter it was. He thought there ought to be two Examiners at the Pass Examination table.

Mr. GREAVES said he agreed with Mr. Dollar that there should be two Examiners at the Pass Examination, and would support the motion. Mr. Fleming had been an Examiner for a great many years, and had given great satisfaction. If the students were not fit to pass, Mr. Fleming was just the man who would not pass them. The only desire for having a second

Examiner was to give confidence to the other Examiner, and satisfaction to the table and the examination itself.

Professor WALLEY said that on looking over the list of examinations he had found the percentage of rejections by the Examiners to be pretty well equal.

Mr. DOLLAR rose to order, because he did not think they were sitting there as a jury on Mr. Fleming.

Major-General Sir F. FITZWYGRAM said his motion was made with the best feeling towards Mr. Fleming, who was a personal friend of his own, and if Mr. Fleming had rejected more students than the average of Examiners had done, he should consider, from what he himself had seen of these examinations, that that was a very high qualification for Mr. Fleming sitting alone. If any reports had been circulated in regard to him because he had had the courage to do his duty alone, that was a reason why he ought to have the assistance of a second Examiner alongside of him. The motion he had always intended to make, and felt it is duty to make, on the distinct understanding that the Council should appoint another Examiner as soon as the funds would allow it.

The PRESIDENT said he should prefer to wait for the appointment of a second Examiner at his table until the Royal College could see its way to increase the number of Examiners all round. In his professional work he had not got any assistance in the other important matters he had in hand, and he was willing to go on in this. He thought the appointment of a second Examiner at his table alone would be a reflection on him.

Sir F. FITZWYGRAM said he should be willing to modify his motion. He gave notice that at the next quarterly meeting he would move "That the Finance Committee be requested to report how soon the finances of the College would admit of the appointment of a second Examiner at each table in the First, Second, and Pass Examinations, and report thereon."

Mr. HARPLEY said, he wished to recall to the Council the circumstances under which Mr. Fleming accepted the office of Examiner single-handed for the Pass Examination. It was to oblige the College, in so far as their finances were concerned. Mr. Fleming at the time personally objected to such a proposal. He had, however filled the position allotted to him both with credit to himself and with honour to the profession, and had the confidence not only of that meeting, but of all the Examiners serving with him. He (Mr. Harpley) was also asked to be single-handed, but he said he could not be so, because there was a Practical Examination in the morning. He did not think there was any member of the Council who would have a doubt as to Mr. Fleming's integrity (hear, hear), and he thought that no student should have the paltry excuse that he was sent back because he belonged to a particular college. He (Mr. Harpley) did not know whether the students who presented themselves before him belonged to Edinburgh or Glasgow, and he thought Mr. Fleming occupied the same position. If Mr. Fleming thought that, having two Examiners at his table, reflected in any way on his integrity, as a body the Council could not pass the motion. They must draw out new rules, and have additional Examiners for the First and Second Examinations, rather than Mr. Fleming, as an examiner, should be slighted in any possible way. He would propose, therefore, a postponement of the question.

The PRESIDENT again expressed his opinion that, at the present time, he preferred that there should not be a second Examiner appointed at his table.

Mr. HARPLEY proposed, as an amendment, that the discussion on the question be referred to the next meeting.

Mr. CARTWRIGHT seconded the amendment.

Sir F. FITZWYGRAM'S motion, as modified, was then put, which was seconded by Mr. DRAY, and carried.

The PRESIDENT then read the following motion, which had been put on the notice board for confirmation:—"That before a medical gentleman is allowed to appear for any examination, he shall furnish sufficient evidence as to the legal qualification he holds in medicine or surgery."

On the motion of Mr. DRAY, seconded by Professor PRITCHARD, the motion was carried.

Mr. WALLEY asked for the interpretation of Bye-law 34, which was explained by the President.

The PRESIDENT, again referring to the Belgian Conference, said that at next meeting he should bring forward the names of certain gentlemen on the Continent who were distinguished in Veterinary Medicine, and move that they be, with the permission of the Council, elected Honorary Fellows of the College.

Mr. DOLLAR gave notice of the following motion:—

"That the Third Examination will begin with the Practical and Clinical portion, and any candidate failing to obtain a sufficient number of marks in this part of the examination will be prevented proceeding to the Final Examination."

On the motion of Mr. DRAY a vote of thanks was accorded to the President for his very able conduct in the chair, and the Council then adjourned.

## NORFOLK AND EASTERN COUNTIES VETERINARY MEDICAL ASSOCIATION.

A MEETING of this association was held at the Norfolk Hotel on July 27th, the President (Mr. A. H. Santy, F.R.C.V.S.) presiding, and the following gentlemen being present:—Mr. W. Shipley, of Yarmouth; Mr. F. Low, of Norwich; and Mr. E. Barker, of St. Faith's (Vice-Presidents); C. Williams, Esq., F.R.C.S., Norwich; Mr. J. K. Gooch, Holt; Mr. W. Ellis, Hempnall; Mr. J. Hammond, Bale; Mr. T. Augur, Wymondham; Mr. S. Smith, Lowestoft; Mr. H. Newson, Beccles; Mr. G. Whincop, Norwich; Mr. J. D. Overed, Blofield; Mr. Findlay, V.S. Inniskilling Dragoons; Mr. W. Bower, East Rudham; Mr. L. Butters, Norwich; and Mr. Santy, jun.

The minutes of the last meeting having been passed, the PRESIDENT read letters from General Sir Frederick Fitzwygram, Bart., F.R.C.V.S., and other eminent members of the profession, stating their inability and regret at not being able to be present on this occasion, but who expressed their willingness and desire to attend at the next meeting of the association. Mr. G. A. Banham, of the Brown Institution, London, wrote, suggesting that a paper upon the effects of lightning on animals would be very desirable, in connection with this society; and subsequently it was resolved, on the motion of the Vice-Chairman, seconded by Mr. Bower, that Mr. Banham be thanked for his suggestion, and that he be invited to read a paper on this important subject at the annual meeting to be held in January next, when it was anticipated there would be a large gathering.

The accounts of the present date were presented, and showed a balance of £15 18s. On the motion of Mr. Hammond, seconded by the Chairman, Mr. J. Carter, M.R.C.V.S., of Litcham, was elected a member of the association, and Mr. G. A. Banham, of the Brown Institution, London, was also elected.

The PRESIDENT then drew attention to the desirability of terminating the official year in December instead of July as heretofore, and the election of the officers at the same period, and moved that this alteration be made

forthwith. This was seconded by Mr. J. D. Overed, and agreed to unanimously, the opinion being expressed that the annual meeting should be held in January if possible, and not later than the first week in February.

The PRESIDENT, who was heartily received, in offering a few remarks to the meeting, congratulated the association on its position, and the manner in which it was recognised by the profession and by other veterinary medical societies. They had been called upon to assist in returning certain members to the veterinary Parliament; and he could not help feeling proud and gratified that not only had the chosen of their combined associations been elected, but that Mr. George Fleming, F.R.C.V.S.—their especial nominee—had been returned at the head of the poll, and had been unanimously chosen as the President of the Royal College of Veterinary Surgeons for the ensuing year. As President, Mr. Fleming had represented the profession at the Congress in Belgium. He (the President) was very pleased that the question of the penal Act, which was mooted in this society two years since, was now receiving attention from headquarters: and that three of the principal Veterinary Associations—the Yorkshire, Lancashire, and Liverpool—had forwarded letters in support of the above Act. He hoped that the members of this association would authorise him to forward a similar letter giving the Act their cordial support. It would doubtless be noticed by the members that their worthy President had moved in Council that steps be immediately taken to obtain an Act of Parliament for the protection of the title of Veterinary Surgeon; and he (Mr. Santy), as the principal officer of this society, had forwarded a letter of congratulation to the President on his election, to which he most courteously replied. He earnestly hoped that when they obtained the penal Act, that the members of the Council would strictly enforce the apprenticeship clause; as he was quite sure it was impossible to have good veterinary surgeons unless they learned in early life the numerous details and delicate manipulations required in general practice, and nothing could be more uncomfortable or detrimental to the advancement of the individual, or more derogatory to the profession generally, than seeing its members gradually educated by their own blunders at the expense of the public. (Hear, hear.) The President then briefly alluded to the satisfactory character of the balance sheet, and to the alteration of the period for the official year; and in conclusion expressed the hope that each member would individually feel himself responsible for the welfare of the society and strictly adhere to its objects, by doing which he would not only assist in advancing his chosen profession, but would most assuredly rise in his professional and social status. (Applause.)

Mr. J. D. OVERED, M.R.C.V.S. (of Blofield), the Hon. Secretary of the association, was then called upon to read a paper, entitled "Cases from my Note-book." He commenced his remarks by expressing the opinion that it was quite unnecessary, in the presence of gentlemen united as one man for the express purpose of promoting veterinary science, and who periodically meet together for open discussion and the free interchange of ideas on important subjects in connection with veterinary medicine and surgery, to insist upon the necessity of each one being ready and willing, as opportunity offered to respond to the call of duty, but, nevertheless, they must not forget that it was by individual effort, and by personal interest alone, that success could crown their exertions. Addison had said, "'Tis not in mortals to command success," but he significantly added, "We can do more; we can deserve it." Let them see in future, as those having the welfare of this association at heart and desirous of seeing it established on a broad, firm, and permanent basis, that their efforts and their motives should be such as to deserve success; and he believed the day was not far distant when they would be able to congratulate each other on having attained it. On this occasion he did not

attempt to prove a pet theory, nor to illustrate a particular object by the composition of an essay; but his object was rather to give this meeting a practical turn by relating a few cases which had been brought under his own observation in the ordinary routine of his practice as a country veterinary surgeon, which he trusted might be of interest. He hoped that the discussion and the opinions expressed would increase their knowledge and power in the exercise of their professional duties to assuage the sufferings, to mitigate the sorrows, and add to the happiness of those domesticated animals with which the well-being, the prosperity, and the pleasure of mankind was so closely identified. Mr. Overed then proceeded with his paper, which was of an interesting and gossipy character, including a variety of cases, among which was—Injury to the superspinous cervical ligament (*ligamentum nuchæ*) in a colt; singular case of a horse falling through a railway bridge; two cases of ruptured bladder in mare and bullock; rupture of diaphragm in a colt, etc., etc.

There was considerabie discussion on all the cases cited, the first one eliciting an hour's instructive conversation.

Mr. L. BUTTERS, M.R.C.V.S., followed, giving a case of tumours in the ventricle of the brain of a horse, and describing the symptoms of the case up to the death of the animal. The diseased organ was submitted to the inspection of the members, and some discussion took place in regard to the progress and symptoms of this malady among horses. The question was asked by Mr. WILLIAMS, if the well-known disease of Megrims in the horse had ony connection with the incipient stage of these tumours. The PRESIDENT, in reply, thought it very probable that such might be the case.

Mr. CHARLES WILLIAMS was requested by the Chairman to give the members the result of his examination of the animal's brain. He stated that the right ventricle contained a long oval tumour, half the size of a turkey's egg, having a smooth surface, being firm to the touch, and of a dark-brown colour, similar to the external surface of a human spleen. A smaller tumour existed in the opposite ventricle, attached to and springing from the choroid plexus. On making a section of the tumour, its inner aspect presented a number of yellowish spots of various sizes, most of them being of the size of a pea. They were soft, and had the appearance of tubercle in a state of casefication. The soft yellow material could be enucleated from the cysts and when examined microscopically were seen to consist wholy of plates of cholesterine and oil globules. A portion of the tumour, when allowed to dry, shrivelled into small lumps of shining scales like minute plates of mica. Neither cancer nor tubercle were found in connection with these tumours.

At the close of the discussion the Chairman proposed a hearty vote of thanks to the Hon. Secretary for his paper, saying that it might teach some of them the lesson of not arriving at a conclusion in a case with too much haste. This was seconded by Mr. Bower and carried unanimously. A similar compliment was paid to Mr. Williams on the motion of the Chairman, who alluded in terms of praise to the fact that Mr. Williams took an active interest in this society, and also to his kindness in giving information to the members on the present occasion. The Vice-Chairman, who seconded, expressed the hope that other medical men would pursue the same course with regard to this association.

A cordial vote of thanks was then accorded to the worthy President for the able manner in which he had discharged his duties; and subsequently a number of the members partook of tea, after which the proceedings terminated.

## YORKSHIRE VETERINARY MEDICAL SOCIETY.

THE usual summer quarterly meeting was held at the Queen's Hotel, Leeds, on the 22nd July; the President, Mr. W. G. Schofield, in the chair. The following members were also present—viz., Messrs. Naylor, J. Freeman, Anderton, Carter, Walker, J. M. Axe, Lodge, Deighton, and the Secretary.

Messrs. Robertson, Howard, and Lawson, Leeds; and Mr. Greenhalgh, student, were also present. Apologies for non-attendance were received from Messrs. Dray, Professor Williams, J. and J. Freeman, Greaves, Danby, Patterson, and Ferguson.

A letter from the Secretary of the Council, thanking the Society for the offer of assistance in obtaining a penal clause, was read. The Secretary on behalf of Mrs. Cuthbert and family, thanked the members for their kind resolution of sympathy.

The PRESIDENT said that he deeply lamented to say that death had again laid one of their young and respected members low; and with a few sentences of expressive sympathy, he moved that a letter of condolence be sent to Mrs. Murdoch and family, expressing deep sympathy with them in their recent sad bereavement. This Mr. FREEMAN seconded; carried.

The SECRETARY proposed, and Mr. NAYLOR seconded, the election of Mr. Robert Lees Robertson, M.R.C.V.S., Leeds. Carried.

Mr. DEIGHTON nominated Mr. Snarry, York.

Mr. FREEMAN nominated Mr. William Chambers Lawson, Leeds.

Mr. HOWARD read the particulars of a case of violent injury to the fetlock-joint in a mare; in addition to the parts being severely crushed, the joint was lacerated. Although Mr. Howard expressed his opinion that treatment would be useless in the case, the owner persisted in a trial being made; the mare was placed in slings, and the parts went through the various phases of inflammatory action for a period of twelve months, until complete anchylosis had taken place. The animal was eventually destroyed. Mr. Howard exhibited the pathological specimen of the case, which was a very pretty and interesting example of the kind.

Mr. NAYLOR stated that recently there had come under his observation several cases of malignant sore throat in the low-lying districts of Wakefield and Pontefract, and although his cases had mostly done well, great care and attention had been requisite to guide them through the low type of febrile disturbance attendant.

The PRESIDENT related some cases of sore throat occurring amongst the horses in a farm, traceable to the drinking of water impregnated with sewage.

Mr. FREEMAN also mentioned some cases of throat disease originating through impure drinking-water.

Mr. LODGE gave the details of a persistent and troublesome case of abscesses in the parotideal region, then under treatment. A large tumour was formed upon each side of the throat, rendering the elevation of the animal's head impossible; the application of constant fomentations and poultices, also blisters and setons had all failed to give relief.

Mr. LAWSON gave particulars of cases simulating Strangles, arising from the drinking of impure water, and occurring upon a large farm in Herefordshire.

The PRESIDENT related a case of obstruction of the bowels, in which he had extracted a large calculus from the furthest extremity of the rectum, showing the urgent necessity for thoroughly exploring that bowel in these cases.

The PRESIDENT exhibited a case of fracture of the sacral and lumbar vertebræ. The horse was thrown down an embankment, and in the course

of a week was apparently sound and ready to work. She was found down and unable to rise, and the true nature of the injury being apparent, she was at once destroyed.

Messrs. WALKER, ANDERTON, and LAWSON, made a few remarks upon the treatment of fractures, etc.

## AUSTRALIAN VETERINARY MEDICAL ASSOCIATION.

A MEETING of veterinary surgeons took place at Melbourne on June 1st, for the purpose of forming a veterinary medical association for Australia; Mr. Graham Mitchell, F.R.C.V.S., presided. The chairman stated that this movement had been started by Mr. Kendall, and read a letter written by that gentleman, which appeared in *The Leader*, pointing out the unsatisfactory state of veterinary science in these colonies. He then went on to show that the profession had met with so little encouragement either from the Government or the public, that many good scientific men had left the ranks of the profession to follow occupations of a more thankful nature. The prevailing diseases of stock were then briefly alluded to, and it was stated that the regulations of the Stock department, as at present existing, were totally unfit to cope with the spread of disease. Mr. Mitchell also observed that Tuberculosis (consumption) was a very serious disease in cattle, as instances had been known of the disease being produced in children by drinking the milk from affected cows. The hydatid disease in sheep was then very prevalent, and as numbers of sheep are pasturing on the watersheds supplying the Yan Yean, the water may possibly become impregnated with the larvæ of these entozoa, which in the adult form become developed into tapeworms in the human subject and the dog. Many other diseases were mentioned which it will be the duty of the association to inquire into. The chief objects will be to promote veterinary science by encouraging the united action of members of the profession throughout these colonies, in the investigation of diseases of animals and the important effects they have upon the health of the community; to draw the attention of stock-owners to the necessity of rendering all the assistance they can in these investigations, by describing outbreaks of disease and noting their progress, and by forwarding, whenever opportunities occur, morbid specimens for examination, etc. To watch the general interests of the profession, and to protect it against the frauds and impositions of unqualified persons. To facilitate these objects it is intended to hold monthly or quarterly meetings, at which papers will be read, pathological specimens exhibited, and subjects brought forward for discussion. Several letters were then read from members of the profession in different parts of the country, regretting their inability to attend, and expressing their sympathy with, and approval of, the movement. It was then proposed by Mr. Kendall, and seconded by Mr. T. C. Dobson, that a Veterinary Medical Association for Australia be formed, which was carried unanimously. Mr. Kendall was then elected hon. sec. *pro tem.*, and the following gentlemen appointed as a provisional committee to draw up rules for the working of the association, to be submitted at the next meeting, to be held at Menzie's Hotel on the 1st July next:—Messrs. J. P. Vincent, G. Mitchell, T. C. Dobson, and W. T. Kendall.

## NEW MEMBERS OF THE PROFESSION.

AT the several meetings of the Scottish section of the Court of Examiners of the Royal College of Veterinary Surgeons, held in Edinburgh on 22nd

July, the following students passed their final examination and received the diploma of the Royal College of Veterinary Surgeons :—

*Edinburgh Veterinary College.*

| | | |
|---|---|---|
| Mr. Robert Levie* | ... ... | Nesting, Shetland. |
| „ John Teggart | ... ... | Parish Ardboe, Co. Tyrone. |
| „ Johnson Gibbins | ... ... | Thurmaston, Leicestershire. |

*New Veterinary College, Edinburgh.*

| | | |
|---|---|---|
| Mr. Wharton William Forster | ... | Great Massingham, Norfolk. |
| „ George Edward Nash | ... | Carperby, Bedale, Yorkshire. |
| „ John Aitken ... ... | ... | White Hart Street, Dalkeith. |
| „ William Summers ... | ... | Milescott, Allendale, Northumberland. |
| „ John Fisher Thompson* | ... | Aspatria, Cumberland. |
| „ Harry I. Hunt ... | ... | Speenhamland, Newbury. |
| „ William Edward Livock | ... | Wavertree, Liverpool. |
| „ James Walsh Canty* | ... | Kilfrush, Knocklong, Limerick. |

The following students passed their First Examination at the meetings of the Court of Examiners held in Edinburgh on the 12th, 13th, 14th, and 16th July :—

*Edinburgh Veterinary College.*

Mr. Thomas Horton.*
„ James Wade.
„ George Timms.
„ Thomas James Mitchell.*
„ Martin Patrick Walsh.
„ David Shiels Prentice.
„ Simon Bailie.
„ Duncan McArthur.
„ John McAlley.*
Mr. James Anderson.
„ William Welsby.
„ John Braddell.
„ Christopher Jones.
„ James Doig.
„ John Edward Tudor.*
„ James O'Dwyer.
„ William Charles Croudace.
„ Arthur Bruce Dundas.
Mr. Richardson Wood.

*Edinburgh New Veterinary College.*

Mr. Hedley Houlden Harrison.
„ Joseph Henry Carter.
„ Robert Midgley Sunderland.
„ Richard Jones.*
„ John Newton Barber.
„ Albert Spruce.
„ William Harry Blunt.
„ Thomas Dickson Connochie.*
„ James Pickup.*
„ Frederick Hood.*
„ Daniel O'Leary.
„ Martin Carroll.
„ John Carroll.*
„ Thomas E. Horrocks.*
Mr. Charles Dickson Wishart.
„ Edward Lee Ackroyd.
„ Robert Cockburn.*
„ George Hutchinson.*
„ Arthur Henry Spinks.
„ Charler Thomas Barnes.
„ Ernest Herbert Hallam.
„ Edward Thomas Edwards.
„ George C. O. Fowler.
„ James McLaren.
„ John Airth.
„ Thomas Charles Bradshaw.
„ Walter Edmondson.
„ John Finlayson.*

* Marked thus passed with Great Credit.

*Glasgow Veterinary College.*

Mr. John Dick Gemmell.
„ James Gilmour Dickie.
„ Patrick Daniel Kelly.*
„ Thomas Logan Houston.
„ William Alexander McGrigor.*
„ William Wright.
„ Thomas Sherwood.
„ Robert McCrindle.
„ Patrick Currie.
„ John Freeland.*
Mr. Samuel Hirst.
„ Joseph May Magill.
„ Alexander Brown (Nealston).
„ Patrick D. O'Connor.
„ John Renfrew.*
„ John Francis Hayes.
„ John Reid.
„ James Martin.*
„ Joseph Hughes.
„ John McLean.
Mr. William Shand.

The following passed their Second Examination :—

*Edinburgh Veterinary College.*

Mr. Louis Delacherois.
„ David Jones.
„ Thomas King.
Mr. James George O'Donel.
„ John Rogerson.
„ William Henry Jones.
Mr. John Roberts.*

*Edinburgh New Veterinary College.*

Mr. William Irwin Roberts.*
Mr. Walter G. B. Dickinson.*

*Glasgow Veterinary College.*

Mr. Benjamin Hoadley.
Mr. William Davis Hunter.
Mr. Andrew Carnduff.

NEW VETERINARY COLLEGE, EDINBURGH.

PRIZE LIST, SUMMER SESSION, 1880.

*Chemistry.*—Medal, Mr. Finlayson, Gourock.
*Botany.*—Medal, Mr. Finlayson.
*Materia Medica.*—Medal, Mr. J. Carroll, Coolruss, Bruree. First certificate, Mr. F. Hood, Edinburgh. Second certificate, Mr. M. Carroll, Coolruss.
Prizes for the best test examination, presented by Mr. Thompson, of Aspatria. First, Mr. F. Hood. Second, Mr. R. Cockburn, Galashiels.
The prize of £20 given annually by the Principal to the student who passes the best second professional examination, has been gained by Mr. W. Woods, Wigan.

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# Army Veterinary Department.

*Gazette*, August 24th.

VETERINARY DEPARTMENT.—First Class Veterinary Surgeon John James Channon is granted retired pay. The under-mentioned Veterinary Surgeons on probation, to be Veterinary Surgeons :—Frederick J. Short and Harry A. Woodroffe.

THE complaints as to the neglect experienced by Army veterinary surgeons in the matter of honours and rewards, have at last been recognised to some extent. But it will be seen that the concession is not largely in the way

of liberality, and will prove, in fact, of little benefit to the department. It has reference only to the lowest grade, and leaves the first-class veterinary surgeons and the inspectors where they were before—without the slightest prospect of recognition for distinguished or meritorious service. We do not think the following warrant will tend to allay the discontent to any appreciable degree, though it is an acknowledgment that this discontent prevails :—

"Whereas we deem it expedient to amend the regulations which govern the promotion of the officers of the Veterinary Department of our Army, by providing for the special promotion of veterinary surgeons who have rendered distinguished service ; our will and pleasure is that in a case of distinguished service, a veterinary surgeon, if qualified, may be promoted to the rank of first-class veterinary surgeon without reference to seniority ; and in such a case the recommendation detailing the services for which the officer is proposed for promotion, shall be published in the Gazette in which such promotion shall appear. Given at our Court at Windsor, this 7th day of July, 1880, in the 44th year of our reign."

Young veterinary surgeons who now enter the Army scarcely appear to know on what terms they do so. They join for ten years, at the end of which Government will give them £800, and very probably their dismissal ; but if considered worth retention, they will be re-engaged for another ten years, at the end of which they will receive a further sum of £800, *but without pension.* The result is that, supposing they join at twenty-one or twenty-two years of age, they leave the army at thirty-one or thirty-two ; or if re-engaged, at forty-one or forty-two years of age. When it is remembered that they cannot, as above shown, obtain a pension, it is readily seen how unwise it is for any young veterinary surgeon to select a career which will leave him stranded, and maybe homeless and poor, at an age to which all prudent men look forward as a time when they will have made a comfortable and settled position, or be on the road to forturne. It is therefore abundantly evident that young men now joining the Army Veterinary Department do so under great disadvantages. The same system was recently tried for a short time in the Army Medical Department, in which, however, a dearth of candidates showed that it was intolerable ; it has, consequently, been abolished.

We understand that a committee has been appointed to inquire into the causes which render army service unpopular among veterinary surgeons, and especially in India. The Army has great difficulty in attracting suitable candidates from the schools, and those who join are not long in the service before they are disposed to leave. Several meetings of the committee have taken place at the War Office. We earnestly hope that its representations will be ample and energetic. In the event of a European war, or even an extensive war in India, the present discontent would be found, we fear, to operate most perniciously.

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## Obituary.

WE have to record the somewhat sudden death of Mr. Daniel Wyer, senr., of Folkingham, Lincolnshire, in the eighty-first year of his age. He for a long time, and up to a few years ago, conducted a very extensive practice, when he retired in favour of two of his sons. Turning his attention entirely to agricultural pursuits, he continued these until a few days before his death.

# Notes and News.

FASTING OR STARVATION.—The *Schweizer Militarzeitung*, noticing the fasting experiment of Dr. Tanner, says that a similar cruel attempt was made with a number of horses in Paris in the spring of 1876. There was, indeed, this difference between the two cases—that the fast was forced upon the poor quadrupeds without their consent, and that there was pretence of utility about the French experiment. The aim, as it was stated at the time, was to discover how long horses could go without food in the event of the scarcity which accompanies a state of seige. The following results were obtained from the inhuman experiment:—1. It was proved beyond all doubt that a horse can hold out for twenty-five days without any solid nourishment, provided it is supplied with sufficient and good drinking-water. 2. A horse can barely hold out for five days without water. 3. If a horse is well fed for ten days, but insufficiently provided with water throughout the same period, it will not outlive the eleventh day. One horse, from which water had been entirely withheld for three days, drank on the fourth day sixty litres of water within three minutes. A horse which received no solid nourishment for twelve days was nevertheless in a condition on the twelfth day of its fast to draw a load of 279 kilos.

HONOURS BESTOWED ON VETERINARY SURGEONS.—At the recent meeting of the British Medical Association held at Cambridge, the honorary degree of LL.D. was conferred by the Senate of the University upon our distinguished colleague, Professor Chauveau, Director of the Lyons Veterinary School. This distinction is well earned; but it unfortunately could not be personally awarded, Chauveau being at the time in Algiers, presiding over the meeting of the French Association for the Advancement of Science. At the meeting of the Société Vétérinaire d'Alsace-Lorraine, on August 1st, Mr. Fleming, Army Inspecting Veterinary Surgeon, was elected an Honorary and Corresponding Member. Professor McFadyean, Veterinary College (Dick's), Edinburgh, obtained the bronze medal in the Natural History Class of the University, at the end of the summer session.

THE COYA OF CENTRAL AMERICA.—In the valleys of Neyba, and others within the jurisdiction of Popayan, is a very remarkable insect, particularly famous for the power of the small quantity of venom in it. This insect, which is shaped like a spider, is much less than a bug. Its common name is "coya," but others call it "coyba;" its colour is of a fiery red, and, like spiders, it is generally found in the corners of walls, and among the herbage. Its venom is of such a malignity, that, on squeezing the insect, if any happen to fall on the skin of either man or beast, it immediately penetrates into the flesh, and causes large tumours, which are soon succeeded by death. The only remedy hitherto known, is, on the first appearance of a swelling, to singe the party all over the body with the flame of straw, or long grass, which grows on these plains. In order to do this, the Indians of that country lay hold of the patient, some by the feet, and others by the hands, and with great dexterity perform the operation, after which the person is reckoned to be out of danger. But it is to be observed, that though this insect be so very noxious, yet squeezing it between the palms of the hands is attended with no bad consequences; whence the plain inference is, that the hardened integument on the hands of most people prevents the venom from reaching the blood. Accordingly, the Indian muleteers, to indulge the curiosity of passengers, squeeze them betwixt the palms of their hands; though no doubt if a delicate-skinned person made the attempt, the effects would be the same as on any other part of the body. Nature is equally

admirable in her works, and in her care of them. Man is endued with discernment, knowledge, and observation, that he may avoid whatever is hurtful to his being; and the irrational species receive the like notices from instinct, and are not less observant than man. The people who travel along these valleys, where they are so much in danger of these coyas, according to the warning before given them by the Indians who attend them, though they feel something stinging or crawling on their neck or face, are careful not to scratch the part, nor even so much as lift up their hands to it, the coya being of such a delicate texture that it would immediately burst; and as there is no danger whilst they do not eject the poison in them, the person acquaints some one of the company with what he feels, and points to the place; if it be a coya, the other blows it away. The beasts, who are not capable of such warning, are yet by instinct taught a precaution against the danger which may result from these insects in the pastures; for before they offer to touch the herbage, they blow on it with all their force in order to disperse any of these pernicious vermin; and when their smell acquaints them that they are near a nest of coyas, they immediately leap back, and run to some other part. Thus they secure themselves from the venom of these insects, though sometimes mules, after all their blowing, have been known to take in some with their food, on which, after swelling to a frightful degree, they have died on the spot.—Ulloa. *Rel. His. Viage America Meridional.* Vol. II.

REINDEER.—The female reindeer carries her calf about six months, and brings forth her young towards the latter end of May, or beginning of June, while it is still winter and the snow upon the ground. This season of the year, in Lapland, does not quickly make its retreat, continuing until the end of June, if the summer be more than usually backward. When this is the case, it proves very unfavourable to the fawns, or calves as they are called, from the deficiency of milk in the mother. The colour of the calf, more than one being seldom born, is of a reddish brown, but afterwards becomes considerably darker.—A. DE CAPELL BROOKE, *Travels in Lapland*, p. 87.

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## Correspondence, etc.

### THE MATRICULATION EXAMINATION.

*To the Editor of the* VETERINARY JOURNAL

SIR,—While reading your editorial leader in the VETERINARY JOURNAL of August, there is one thing that I would like to call your attention to, viz., that third-class certificates of the College of Preceptors are still accepted as equivalent to the matriculation entrance examination. As the names of schoolboys and girls of thirteen and fourteen years old are constantly appearing in the pass list, I ask you, is it not leaving an apparent loophole for the lazy ones to get into the profession?

On referring to the regulations, you will see that the College of Preceptors requires no foreign language for its third-class competitors.

Now, Mr. Editor, allow me to suggest, that if our entrance examinations are to be anything more than a farce, that the third-class certificates be no longer recognised, and that in a short time none but first-class ones be accepted.

Apologising for having trespassed on your space to call attention, in print,

to a matter which, when brought by some students (of which I was one) before the Council of the Royal Veterinary College, was rejected.

I remain, sir,
Yours obediently,
Manchester, *August 16th*, 1880. GEORGE DEVESON, V.S.

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## THE GENERAL EDUCATION OF THE VETERINARY SURGEON.

*To the Editor of the* VETERINARY JOURNAL.

SIR,—It is a well-known fact that the inferior social position of the veterinary surgeon is due to want of a general education. If the matriculation examination previous to entering the colleges were on a good sound principle, the profession would be benefited by it in various ways. The number of students entering the colleges would be diminished ; if the college fees were also raised, the loss in the number of students would be counterbalanced, and the result would be less difficulty for a veterinary surgeon, after leaving college, to obtain a situation as assistant or manager, and appointments would be more remunerative and plentiful. At the present time they are difficult to obtain, owing to the competition.

The rapid rate in which men are entering the profession is likely to put us in the same position as the medical profession—"overstocked." Another good effect of education would be that we should deal more with the principals and less with the coachmen ; and this would do away with the discreditable practice of "tipping," while the power would be taken away from the coachmen of employing whom they thought fit.

I may say that it would be a great boon to the profession and public if quacks were prohibited from dispensing poisonous medicines, as well as using our title, and if men holding a diploma inferior to ours were also prohibited from practising in this country. I am, sir, yours faithfully,

"EXTARRIS."

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## THE USE OF THE TROCAR AND CANULA IN FLATULENT COLIC.

*To the Editor of the* VETERINARY JOURNAL.

DEAR SIR,—In your number for August I notice a letter from Mr. Alexander Gunn, commenting upon a paper on the above subject read by me at a meeting of the Liverpool Veterinary Medical Association. Owing to the incorrect conclusions he draws and expresses, I am constrained to reply—hence my excuse for asking a portion of your valuable space.

The trocar I use has been in my possession some five years, and was purchased in the ordinary course of business from Messrs. Burgess, Willows and Co., London—neither invented nor made to my order, as alleged by Mr. Gunn ; where he obtains his authority for stating such I fail to see, for I most certainly have not laid any claim to inventive genius similar to his. As to its being almost identical with the one introduced by him, one of which I possess, and saw for the first time in April last, I cannot agree ; but I am well aware that the instrument used by myself was in existence *some years* before Mr. Gunn's, and consequently if any one is to be charged with copying, Mr. Gunn is more likely than myself, as his appears subsequently. I, however, lay no such charge, for I do not suppose he ever saw the instrument I use.

The mode of operation, and diameter of the instrument, are, to my mind, open and debateable points, but after a lengthened and frequent use I have not the slightest desire to change from the instrument I have, certainly not for Mr. Gunn's invention, which I have used on several occasions, but not with entire satisfaction.

The abscess being produced by the making of an incision in the skin Mr. Gunn may regard as the cause; I am, however, sceptical, for I have known it follow without any incision whatever, and *vice versâ*—with me it is of very rare occurrence, as is also the presence of ingesta in the canula.

My practice is to use the trocar at any time in Flatulency when called for; did I use it in every case, I should be frequently operating upon cases that do not call for its use, and recover perfectly well without its aid. Mr. Gunn, from the advice he gives, evidently uses it in each and every case of Flatulency however trivial it may be, and before administering any medicine whatever. I cannot congratulate Mr. Gunn on either the policy or the wisdom of such advice.

I am, dear sir, faithfully yours,

Knott Mill, Manchester,
*August 13th*, 1880.

EDWIN FAULKNER.

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## THE FITZWYGRAM PRIZE COMPETITION.

*To the Editor of the* VETERINARY JOURNAL.

SIR,—Seeing in the August VETERINARY JOURNAL a letter under the above heading, and such letter containing observations and insinuations which, if allowed to go forth uncorrected, are calculated to carry very erroneous impressions on an important and grave matter in connection with the character and well-being of our profession, so much so, indeed, that I feel in duty bound to reply.

I hold it is a very serious matter to attack the honour, the honesty, and integrity of gentlemen who are placed in a position of so great responsibility, namely, that of deciding on the relative merits of those students who compete for prizes offered to them. If the fountain be impure, the stream must also be impure. If the judge decides unjustly and dishonestly, there is an end to all hope, there is no protection and no security for either character, property, or life; therefore I say it is a very serious matter indeed to impugn the motives and integrity of examiners, unless there appears distinctly reason for doing so. This letter that I allude to, arrogantly assumes that there are grounds for complaint; it implies that the examiners awarded the first prize on grounds other than those of the competitor's deserts. After stating that two of the competitors failed to obtain the necessary number of marks, *which was true*, it goes on to say, "If he, the successful competitor, had belonged to any other school, he would not have been so handsomely rewarded;" then, again, "It has been given as a kind of concession to a school which has always failed to carry it off;" then, again, "What can we think of them when we find the blue ribbon bestowed on a competitor, for the simple reason that he has not won it, but apparently because that he belongs to a school which hitherto could not win it, and would not now unless it were specially favoured?'

I wish to approach this question with calmness and without perturbation. If there were the slightest truth in it I would have hesitated before writing a reply, but being one of the examiners, I can speak, and also for my colleagues, Mr. H. J. Cartwright, of Wolverhampton, and Mr. F. King, School of Medicine, Edinburgh, that it was utterly and entirely unknown to any of us, who any one of the competitors were, where they were from, or at which of the veterinary schools they matriculated. Nothing could be further from our thoughts than that any of them coming from this school or that school

should in the slightest degree influence us in our decision. I do not know, now, who the unsuccessful competitors were, or where they had matriculated—only what is told me in this letter I am referring to, and the successful competitor, Mr. J. W. Ingram, who succeeded in carrying off almost every prize awarded at the College. I never knew or saw him in my life until the day before yesterday, and I now find he was from Professor William's College, and is in practice in Manchester.

It is stated in the letter that I am referring to, as with a flourish of trumpets, that Gayfield School has hitherto failed to carry off this prize. Here let me ask, has Professor Williams or any one else publicly demurred against the decision, or accused the examiners of acting unfairly, imputing unworthy motives, etc. ? I believe the answer is No ; but the moment one of his students carries off the prize, lo and behold ! some one at once rushes into print, imputing all kinds of motives, in a letter in which there are evidences of envy, animus, and jealousy cropping up in almost every line.

I think it my duty to say that we examined the papers of the three candidates deliberately and carefully, and gave our decision fairly and honestly. We found all the answers given by the successful competitor on each of the three subjects were so satisfactory, that we awarded him "very great credit in each subject," *and I here repeat that when we gave this decision we were entirely in ignorance of who he was or at what school he had been.* So much for the veracity of the statement put forth in this scurrilous letter I allude to. I care not whether it is written by a teacher, as it is believed to be, or by a veterinary student, as he signs himself, I feel that the writer deserves, and will receive, the condemnation and contempt of all right-minded men. I have assisted in the appointment of every examiner for the last twenty years. I consider these men ought to be, and I believe they are, like Cæsar's wife, above suspicion.

As regards the practical examination, it was decided by the donor that since there was only one student eligible, the other two having failed to obtain the requisite number of marks to enable them to compete for the practical—since there could be no competition, therefore the donor decided to forego putting us to the trouble and expense of travelling 200 miles and back again. But had the successful competitor been examined in practice, from what I have learned to-day, the *practical* examination would have been equally satisfactory.

The other two students, although not entitled to anything, were, thanks to the generosity of the donor, awarded, the one £15, and the other £10.

As to the noble donor, Major-General Sir Frederick Fitzwygram, those who know him know full well that he is incapable of doing an injustice to a student or to a school, and we are as one in mind that each school shall stand on its own merits ; but is it not, let me ask, the most pitiable sight in the world to see this miserable, wretched spirit manifested ? We may pity, but no man can envy a man his feelings or his principles, who can be devoid of common decency or common honesty as to allow his indiscretion and his partisan spirit to write and publish to the world a letter containing such a tissue of falsehoods, as is spitefully set forth in this *nom de plume* letter.

THOMAS GREAVES, F.R.C.V.S.

Knott Hill, Manchester, *August 14th*, 1880.

## COMMENTS.

WE learn that the expenses attending the action recently adopted by veterinary practitioners, with the view of modifying the competition between them and the Royal Veterinary College, have not yet been defrayed, and that Mr. Moore is still out of pocket. As the movement has been productive of benefit, inasmuch as the terms upon which subscribers enjoy the privileges of the school have been made less damaging to veterinary surgeons, we trust that those who are thus benefited will contribute towards the cost of amelioration.

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WHEN we are striving to protect our title, and to rescue it from those who have no right to adopt it, it is not satisfactory to find that there are those of our own number who paralyze our efforts by countenancing the discreditable imposition. This is evident from the following advertisement, which has been appearing every week in the *Wellington Journal*—a very influential and widely-read publication. Mr. Evan H. Vaughan is *not* a veterinary surgeon, but Mr. Rose, we believe, is; and the latter countenances the imposition—indeed, gives it his material support—by entering into partnership with the former, and leading the public to believe that both are members of the veterinary profession. Such conduct is neither fair to the profession nor yet to the public, and the *mésalliance* is certainly far from commendable, when consummated in this manner.

VAUGHAN & ROSE,
VETERINARY SURGEONS,
WATLING STREET, WELLINGTON, SALOP.

EVAN H. VAUGHAN begs respectfully to inform his Friends and Customers that, owing to their frequent and pressing requests, he has This Day TAKEN INTO PARTNERSHIP MR. J. ROSE, Member of the Royal College of Veterinary Surgeons, London, and Veterinary Inspector to the Borough of Wenlock; and trusts by skilful treatment, attention, and moderate charges, to obtain their patronage.—July 15, 1880.

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## Communications, Books, Journals, etc., Received.

COMMUNICATIONS have been received from R. Pringle, Army Veterinary Department, Afghanistan; J. W. Hill, Wolverhampton; G. A. Oliver, Royal Artillery, Candahar; S. Wiltshire, Natal; H. Toussaint, M.D., Toulouse; Messrs. Nelson and Fletcher, Sheffield; Professor Walley, Edinburgh; G. Deveson, Manchester; A. H. Santy, Norwich; T. Lambert, Manchester; E. Faulkner, Manchester; W. Shipley, Yarmouth; T. Greaves, Manchester; "Extarris"; G. A. Oliphant, Army Veterinary Department, Afghanistan; G. H. Pemberton, Wellington; C. Clayton, Army Veterinary Department, Afghanistan; J. H. Cox, 4th Madras Cavalry, Bellary.

BOOKS AND PAMPHLETS: Procès-Verbaux des Réunions Tenues à Strasbourg; *W. T. Black*, Notes on Typhoid and Remittent Fevers in the Cape, Natal, and Zululia; *E. V. Hering*, Handbuch der Thierarztlichen Operationslehre (*dritte auflage*); État Sanitaire des Animaux Domestiques dans le Brabant; *E. Semmer*, Ueber die gegenwärtigen Grenzen der Miasmatischen und Contagiözen Krankheiten; Bulletin de Société Vétérinaire d'Alsace-Lorraine; *E. Dele*, Betail de l'Amerique du Nord; *G. Thin*, On Bacterium fœtidum.

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JOURNALS, ETC.: *Annales de Méd. Vétérinaire; American Veterinary Review; Live Stock Journal; L'Echo Vétérinaire; Recueil de Méd. Vétérinaire; Der Theirarzt; Revue Vétérinaire; Wochenschrift für Thierheilkunde und Viehzucht; American Live Stock Journal; Journal of the National Agricultural Society of Victoria; Melbourne Chemist and Druggist; Journal de Médecine Vétérinaire et de Zoötechnie; Mark Lane Express; Farmer; Agricultural Gazette; Lancet; British Medical Journal; Oesterreichische Vierteljahresschrift für Wissenschaftliche Veterinärkunde; Veterinary Gazette; Journal de Med. Vétérinaire Pratique; Deutsche Zeitschrift für Thiermedicin; Edinburgh Medical Journal; Practitioner; Nature.*

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NEWSPAPERS: *Eastern Daily Press; Melbourne Leader; Freeman's Journal; Natal Mercury; Sioux City Cosmopolite; Gorey Correspondent; Oldham Chronicle; Scotsman; Detroit Post and Tribune.*